ENGINEERING NEWS-RECORD

Rink roof hangs from concrete spine p. 30

A McGRAW-HILL PUBLICATION

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Armco Products are Easy to Install, and...

Armco Service Cuts Costs!

Here's how you benefit with Armco Products and services:

30 PRODUCTS, ONE SOURCE. With more than 30 Armco all-metal products for engineering construction, you can save time and money by specifying needs from this one source.

A PLANT IS NEAR YOU. 56 fabricating plants are located throughout the country. This means you can get localized service, usually with important savings in transportation.

PROMPT SHIPMENT. As the world's largest manufacturer of corrugated metal drainage structures, we can fill your order promptly.

HUNDREDS OF SALES ENGINEERS. You get quick action from the Armco Sales Engineer near you, too. Every one is fully qualified through extensive training, to help solve installation or application problems.

CONSTRUCTION SERVICE. On a subcontract basis, Armco Construction Department will install Armco Products for contractors.

SEND COUPON FOR DATA. Armco Drainage & Metal Products, Inc., 4678 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

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4678 Curtis Street, Middletown, Ohio

☐ Send FREE Catalog 15757
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He tested them all

...then bought an Allis-Chalmers HD-6G tractor shovel

Don Nourse, a leading swimming pool contractor, rented tractor shovels until he found one that appealed to his operators, his sales force and company officials. Choice of all concerned—the HD-6G.

HD-6G
72 net hp
1½-yd bucket
19,600 lb

A heaping 1½-yd bucket comes out of the excavation for a 25 x 60-ft pool. There was time before lunch to start work on a wading pool.

Here's why the HD-6G is everybody's favorite at Fiesta

Talk first with Don Nourse, President of Fiesta Pools, Southgate, California, to find how the Allis-Chalmers HD-6G came to be selected as Number 1 production machine. Don's company is the nation's second largest swimming pool builder. Don tells how Fiesta rented tractors before buying their own unit. After trying them all, he's convinced there is nothing available to touch the HD-6G for excavating pools.

Jack Sweitzer runs the HD-6G And he's convinced it's the best machine he's ever been on. Jack now digs an average of two pools a day—and that's *double* the capacity of any excavating equipment they used in the past.

Roy M. Pederson, Vice-President responsible for sales at Fiesta, will tell you their new HD-6G has already added to company sales volume because of its ability to increase production.

Robert E. Franks, Vice-President and Production Manager, says their HD-6G is the first of several purchases of Allis-Chalmers machines. In his opinion, it has proved itself a great asset on their type of operation.

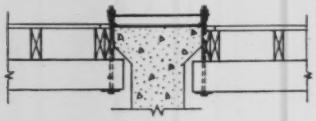
If you're not already using an Allis-Chalmers tractor shovel, you'll be convinced the HD-6G can do the best job for you when your dealer shows you one—*in action—on your job.* Call him today! Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead...*move ahead*
...and stay ahead with ALLIS-CHALMERS

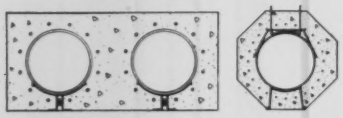
Pre-stressed

Tully & Di Napoli, contractors

Long, pre-stressed concrete girders support the deck of this bridge at Idlewild Airport, New York, designed by the Port Authority. Deck was engineered by Precrete, Inc. Richmond Free-Fit Offset Hanger Frame-Tys, easily adjustable for various slab heights and haunch conditions, were used to support the forms.

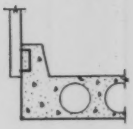


A few Richmond pre-stressing items



Chairs for support and hold-down of cardboard tubing in pre-stressed beams and piles.

Spacers for spirals of pre-stressed piles.



Inserts for railing-in pre-stressed slab bridges.

The increasing use of pre-stressed concrete presents numerous problems to contractors. Richmond's Technical Division is ready to assist you. If you have a problem, write to RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Ave., Brooklyn 8, N.Y. or 315 South Fourth St., St. Joseph, Mo.

ENGINEERING NEWS-RECORD

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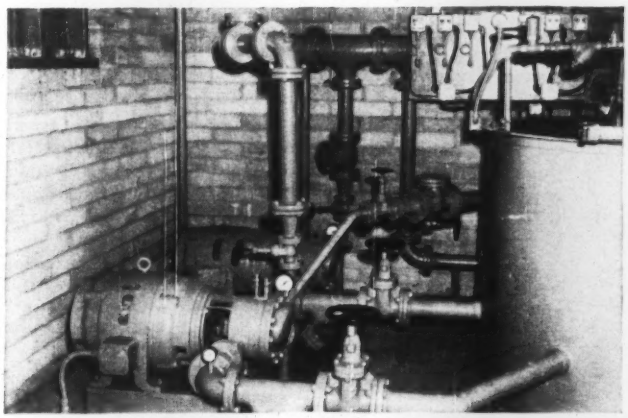
A hippo surfaces with a cavernous yawn—powered by water from F-M pumps shown below.

From butterflies to hippopotami

F-M pumps make animals "live"



In one of the world's most fabulous amusement parks, waterfalls tumble; rivers flow; hippos yawn, and giant butterflies flap their wings—all water-powered by Fairbanks-Morse pumps with F-M motors.

Although a most unusual application, these F-M installations demonstrate the flexibility and experience of Fairbanks-Morse in working with the engineers of any organization.

Whatever type, size or capacity pumps you need—you're sure of satisfaction when you call in your F-M Sales Engineer. Contact him today, or write directly to Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago 5, Illinois, Dpt. ENR-4-10.

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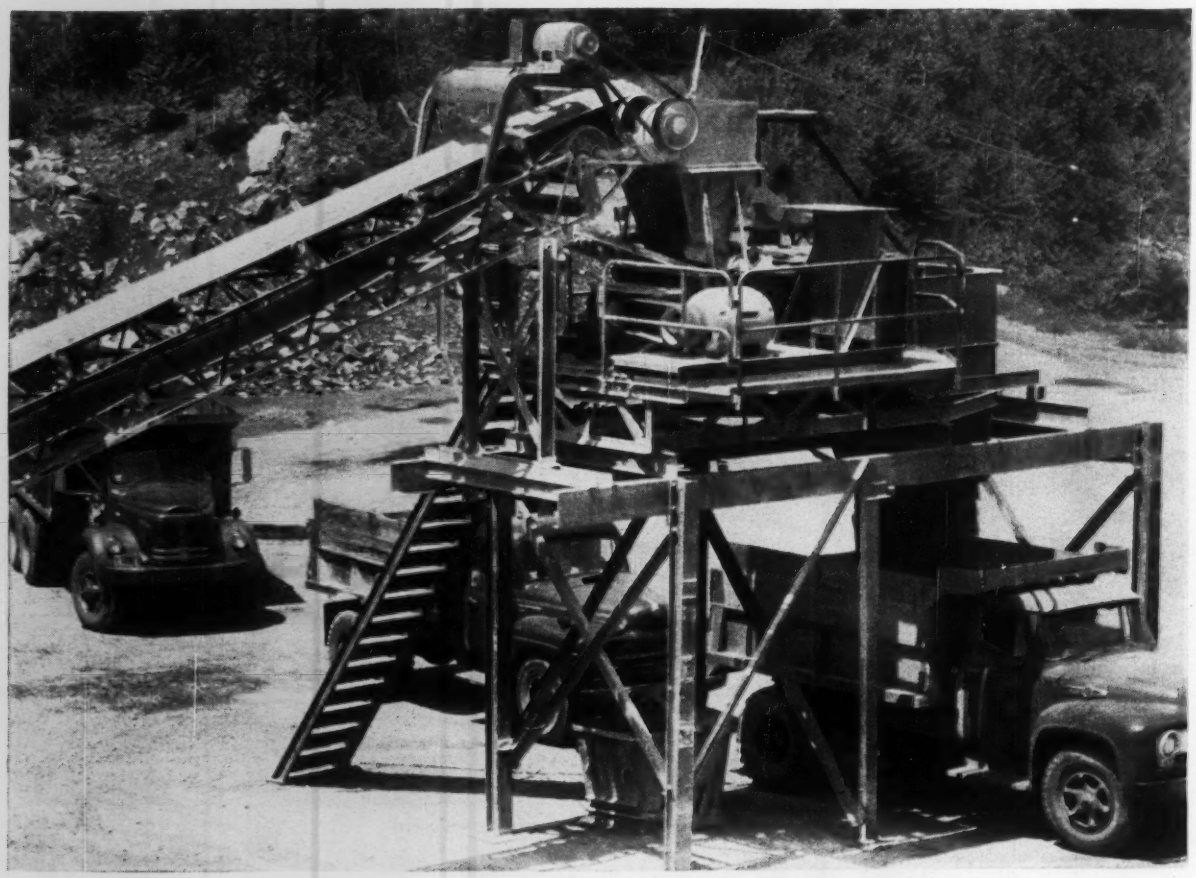

This new Barber-Greene Stabilization Plant is producing base materials at capacities in excess of 400 tons per hour. Write for your copy of new folder.

New, low-cost way to mix base materials at high capacity

Producing over 400 tons per hour, the new Barber-Greene Model 828 Stabilization Plant is designed to supply base materials at the low cost and high capacity required for modern road construction. These plants now operate in many areas of the United States.

The basic plant consists of the mixer unit and base frame, a conveyor to charge the mixer, and a choice of several feeding methods. Barber-Greene supplies all the necessary components for the complete plant.

Centrifugal water pump and precision meter assure correct water content for proper compaction. Twin-shaft pugmill gives fast, thorough mixing. Adjustable dam gate controls mixing time. Five cu. yd. discharge hopper with hydraulically operated clamshell gate allows operation between trucks and minimizes segregation.

Material forms its own mixing chamber, eliminating need for liner plates. Paddle tips and arms are reversible and replaceable. Gas, diesel, or electric power available.

58-6-S

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

B.F.Goodrich

B.F.Goodrich tires give up to 50% more service, contractor reports

F. R. HEWETT CO., general contractor of Spokane, Washington, operates 147 pieces of equipment on jobs throughout the Pacific Northwest. Here the job is the Spokane Valley Freeway. "We switched to B.F.Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Truck Supt. Richard M. Ward. "They have given us up to 50% more service than the tires we used previously—and we have been able to retread them too!" Today Hewett uses B.F.Goodrich tires 100%.

Reports like this come in from contractors all over the country. They find B.F.Goodrich off-the-road tires give them longer, trouble-free service, thanks in part to FLEX-RITE NYLON cord construction. FLEX-RITE NYLON withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. Result: the FLEX-RITE NYLON cord body outwears even extra-thick B.F.Goodrich treads —can be retreaded over and over.

Follow the lead of contractors like Hewett, who reports B.F.Goodrich tires give "very low cost per hour." See your B.F.Goodrich dealer today. He's listed under Tires in the Yellow Pages of your phone book. And ask about the new Rock Service Tubeless or conventional tire that prevents unnecessary tire failures! *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich truck tires

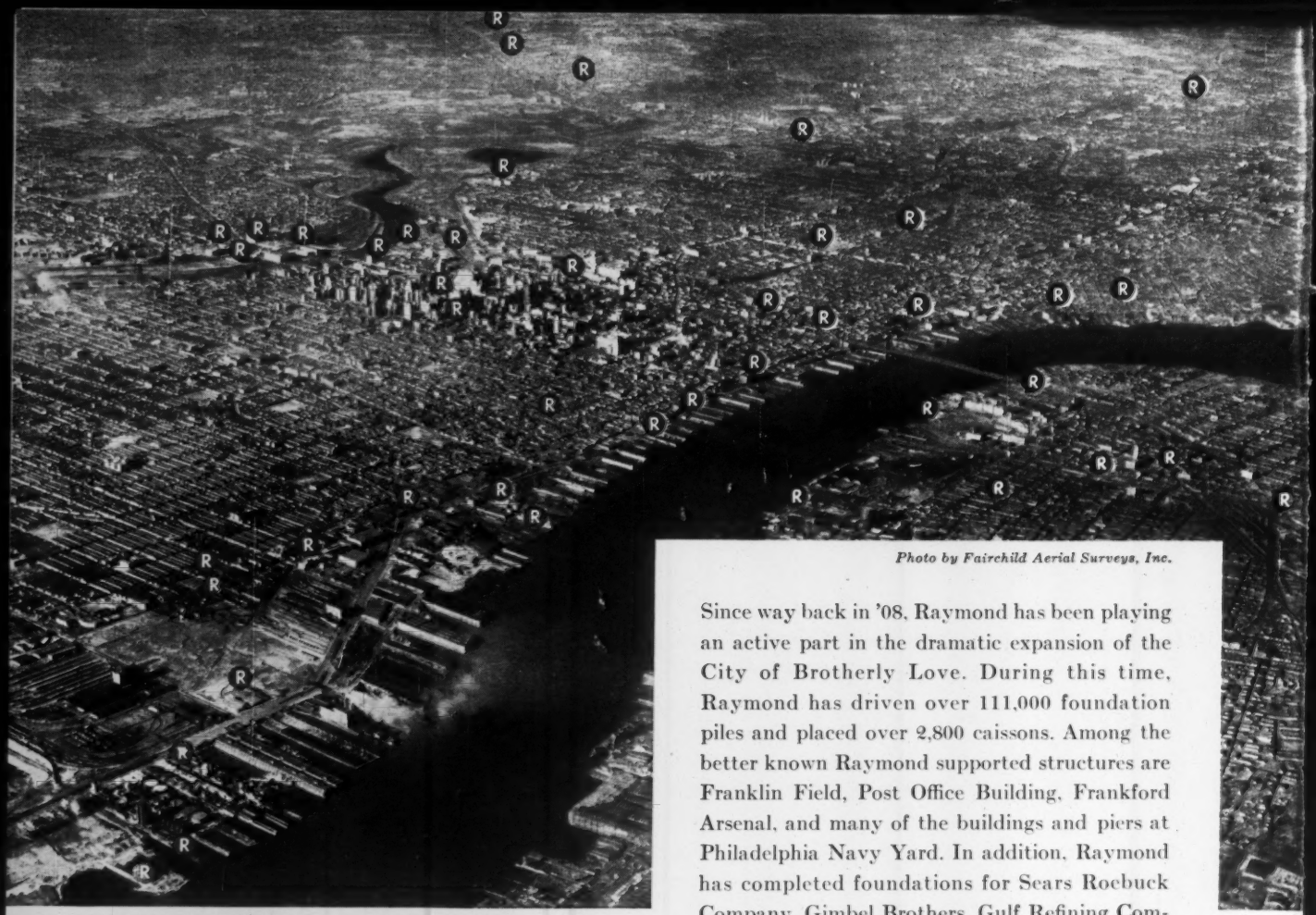

Photo by Fairchild Aerial Surveys, Inc.

THE RED CIRCLES INDICATE STRUCTURES BUILT ON RAYMOND FOUNDATIONS

Since way back in '08, Raymond has been playing an active part in the dramatic expansion of the City of Brotherly Love. During this time, Raymond has driven over 111,000 foundation piles and placed over 2,800 caissons. Among the better known Raymond supported structures are Franklin Field, Post Office Building, Frankford Arsenal, and many of the buildings and piers at Philadelphia Navy Yard. In addition, Raymond has completed foundations for Sears Roebuck Company, Gimbel Brothers, Gulf Refining Company, Phillips Petroleum, Atlantic Refining Company and well over a hundred other clients.

Across the country in other major cities, too, wherever construction is in progress, you'll likely see the blue sign indicating Raymond men and methods are at work. Talk to your nearest Raymond engineer. Let him explain how our 60 years of experience can aid you on your next foundation or heavy construction project.

In Philadelphia... 347 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

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AROUND THE WORLD FOUNDED 1891

COMPLETE CONSTRUCTION SERVICES ABROAD

OUR 61st YEAR

RAYMOND

CONCRETE PILE CO.

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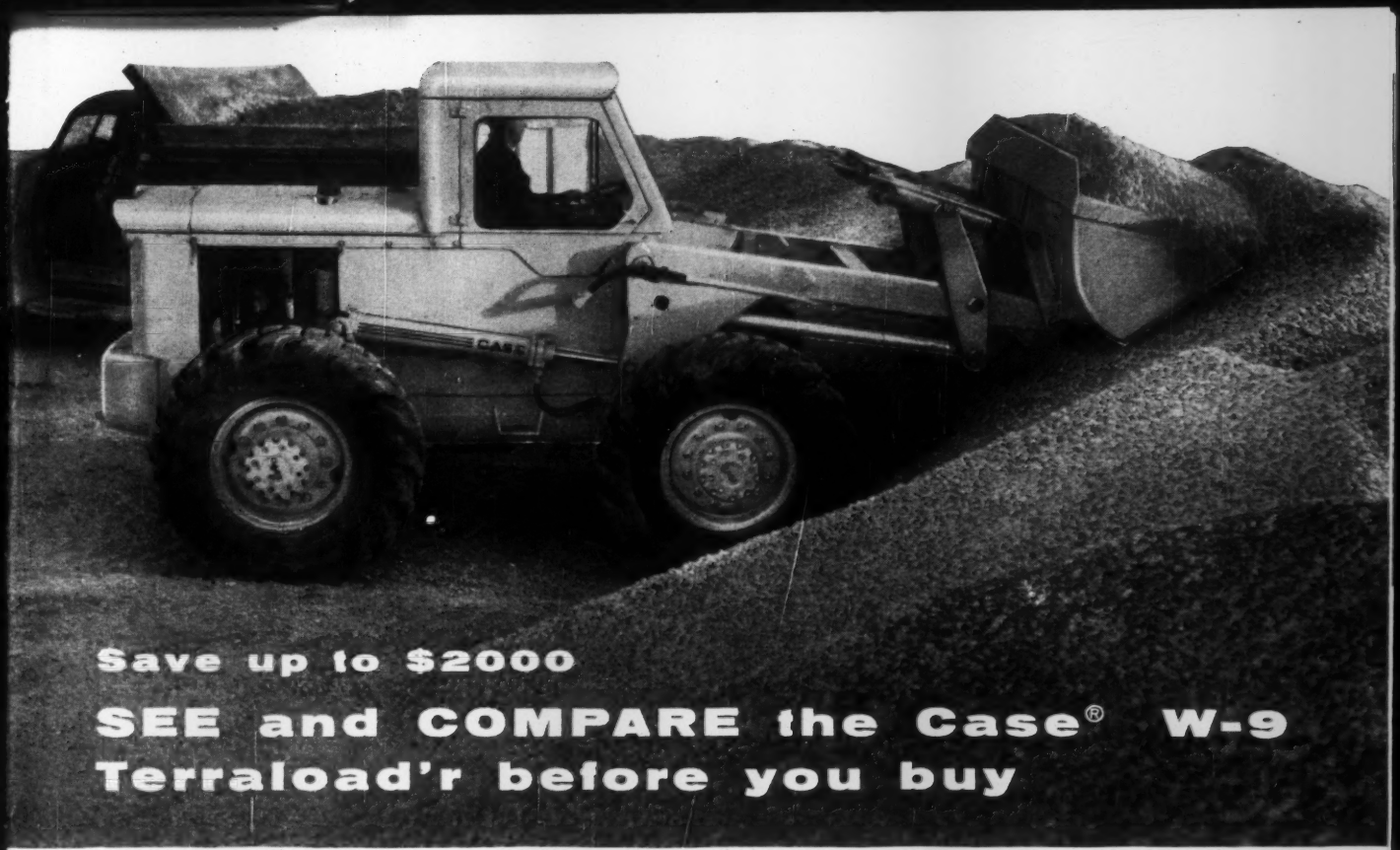
Branch Offices in Principal Cities of the United States. Subsidiaries in Canada, Latin America and other countries throughout the world.

You are cordially invited to send for our new Highway Brochure, which gives a detailed resume of how Raymond can help you and the National Highway Program. Just write Dept. E-6, Raymond Concrete Pile Co., 140 Cedar Street, New York 6, N. Y.



Save up to $2000

SEE and COMPARE the Case® W-9 Terraload'r before you buy

A free demonstration will quickly convince you that the new Case W-9 Terraload'r will *outperform competitive four-wheel-drive loaders costing up to $2000 more.* Main reason is the W-9 has better balance and stability to maintain traction on all four drive-wheels, when digging or traveling with heavy loads. Short, rigid lift arms — pivoted AHEAD of operator — give *better visibility, increase dumping reach, and eliminate danger of catching operator's arm in lifting mechanism.*

Like other Case industrial wheel and crawler units, the W-9 Terraload'r is sold and serviced under *one factory warranty,* by reliable Case heavy construction machinery dealers everywhere. Fifteen centralized Case industrial parts depots insure *fast delivery of parts anywhere in the U. S. and* Canada. Long-term financing and LEASE plans are also available to help you obtain *new* equipment *now* on easy monthly terms, without tying-up needed capital. Mail coupon for full details.

CASE®

1st in Quality for over 100 years

Quick facts

- 1⅜ to 2¾ cu. yd. heaped capacity
- 11,000 lbs. break-out force, 5,500 lbs. carrying capacity
- Four-wheel-drive, with rear-wheel power-steering
- Power-boosting torque converter, plus full power-shift in all speed ranges, as well as forward and reverse.
- Choice of 4-cylinder valve-in-head Case diesel or gasoline engine for maximum operating economy

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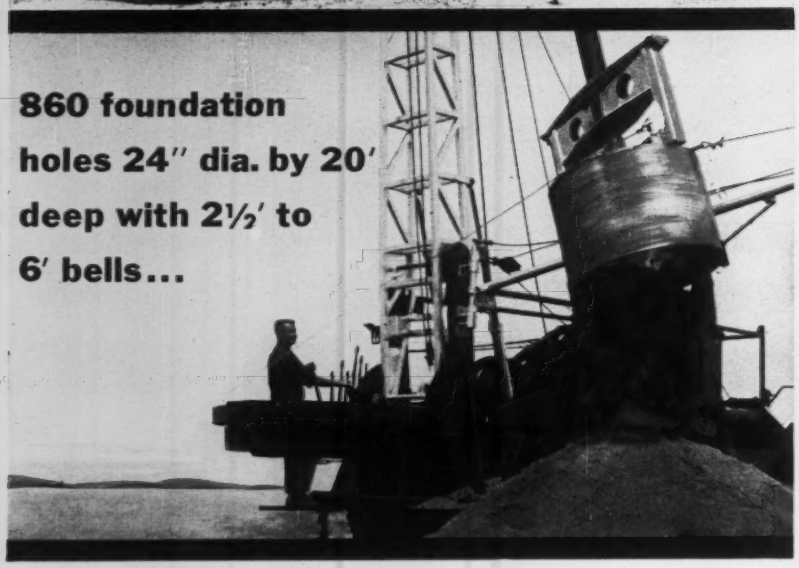
industrial wheel and crawler tractors

loaders • dozers • backhoes • fork lifts • engines

NEW SPEED RECORD!

Calweld digs 12 caissons a day and bells the bottoms!



860 foundation holes 24" dia. by 20' deep with 2½' to 6' bells...

AT ⅓ THE COST of constructing conventional spread footings, six Calweld Earth Drills recently dug 860 holes for drilled-in-place caissons—at speeds up to 12 complete caissons per rig per day! Hitting a record smashing day's rate of 74 completed drilled-in-place caissons, the six rugged Calweld rigs rang up 641 completions in only 14 days!

Performing under adverse conditions, frequently in frozen ground, the Calweld Earth Drills dug 20-foot holes 24 inches in diameter... belled the bottoms from 2½ to 6 feet... placed reinforcing steel cages in all holes... placed steel casings in 25% of the holes... and pulled the casings after concrete was poured.

This outstanding performance is typical of what Calweld Earth Drills can do for you. They can drill any size hole from 10" to 10' in dia. to a depth of 200'.

Write for factual job report "Earth Borers Dig Caisson Holes."

CALWELD bucket type EARTH **DRILLS**

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7222 East Slauson Ave.,
Los Angeles 22, Calif.

MOBILE AND MANEUVERABLE
DRILLS 10" to 120" HOLES
200 FEET DEEP

Reader Comment

Aluminum Grid

SIR—I have just finished reading the article "Multistory School Walled with Glass Block" (ENR Feb. 6, p. 28) and was very pleased with the discussion on how the aluminum grid made such a building possible. However, I was quite disappointed to note that Albro Metal Products Corp., the fabricator of the grid wall systems at the architect's dis-

We placed our years of experience in grid wall systems at the architects disposal and did, in fact, through our shop drawings, play a principal part in the design that you are lauding.

GORDON H. SMITH
Albro Metal Products Corp.
Bronx, New York

Who's Who in NCA

In the news pages of the Annual Report and Forecast issue (ENR Feb. 13, p. 41), it was inadvertently implied that a past president of the National Constructors Association is again president of that association.

To keep the record straight, the gentleman whose picture appeared next to that of Richard Gray is John J. O'Donnell. Mr. O'Donnell is a past president of NCA. The John F. O'Connell mentioned is also a past president and actually headed the NCA committee that worked with Mr. Gray. The present president of NCA is Carl B. Whyte, president of Procon, Inc., Des Plaines, Ill.

Jones Profile Appreciated

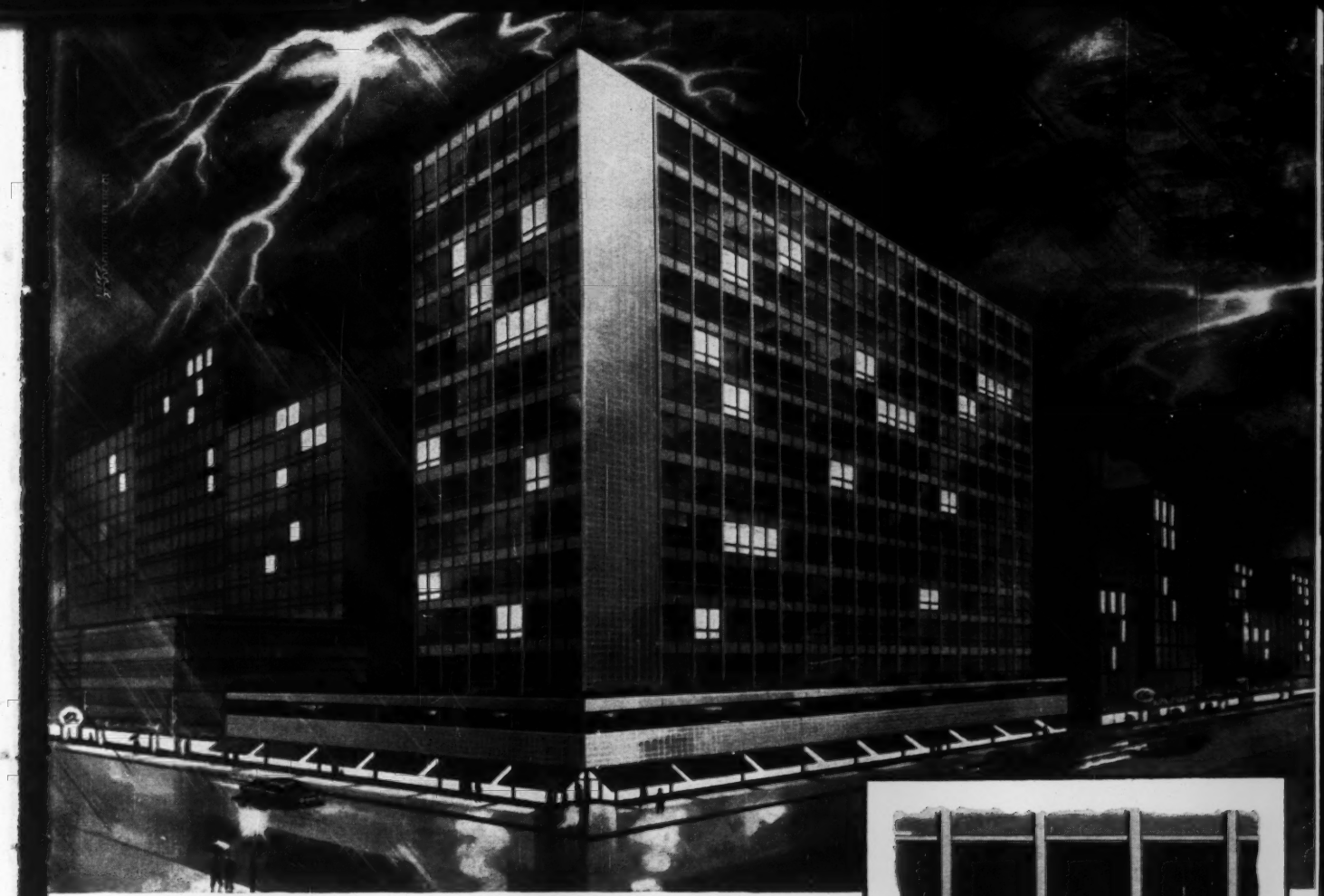
SIR—Hearty congratulations to you for your splendid article on the J. A. Jones Construction Co. (ENR Feb. 27, p. 49).

Edwin L. Jones' philosophy, achievements and religious convictions are truly welcome virtues in our profession. May his full life make good its influence upon the fortunate few who know him better.

E. GEORGE CASSIS
Hillsboro, Illinois

(Reader Comment cont'd on p. 12)

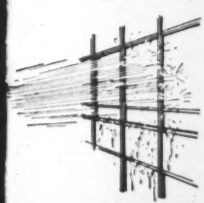
Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York, N. Y.



Now combine design freedom with true weather-tightness in curtain-wall construction

Robertson Windows—Robertson offers a complete line of monumental sash, including the exclusive new side hinged inswinging windows which make cleaning easier and safer, and seal positively when locked. There is no interference from pivot pins if hopper is used below, and the entire window can be removed in minutes for easy shop reglazing.

Mullions and sills—Great versatility is yours. Trim members can be aluminum, stainless, bronze or porcelainized aluminum. Trim also can vary greatly in depth and contour. A system of weep holes provides positive drainage and ventilation for condensation.



Spandrels—Here the designer has infinite choice. The V-panels are aluminum, bronze, stainless steel, Color Galbestos or vitreous enameled aluminum or steel. *Versatile-Wall is as individual as your signature!*

Weather-wise design—A section of Versatile-Wall 10′ wide by 14′ high has been tested in a 140-mile wind with 30 gallons of water spray per minute (equivalent to an 8″ rainfall) with no leakage. Moreover, modular units are designed to expand and contract to take care of building movement and steel framing tolerances without loss of tight seal. Write for literature.

With 150 trained sales engineers and 60 qualified service dealers, Robertson is ready to serve you in any part of the country. You will always have the best of technical assistance when Robertson products are specified.

H. H. Robertson Co.

50 years of experience in Puttyless Glazing Construction

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Robertson Versatile Wall

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By actual test, the brightest, most revealing of all hazard lights, Dietz Flare Torches fully illuminate the danger in any weather: fog, rain, sleet, snow and wind — the stronger it blows the brighter the flame. Weather-proof, rugged and tough, they give up to 40 hours of clear, bright flame from low-cost kerosene.

Use Dietz Flare Torches to show what the hazard is.

ADEQUATE LIGHTING may save you thousands in tragedies, bad publicity and law suits. Write for our latest authoritative manual on Hazard Warning Lighting. It's free. R. E. Dietz Co., 114 Leavenworth Ave., Syracuse, N. Y.

Use Dietz Lanterns to outline the hazard boundaries.

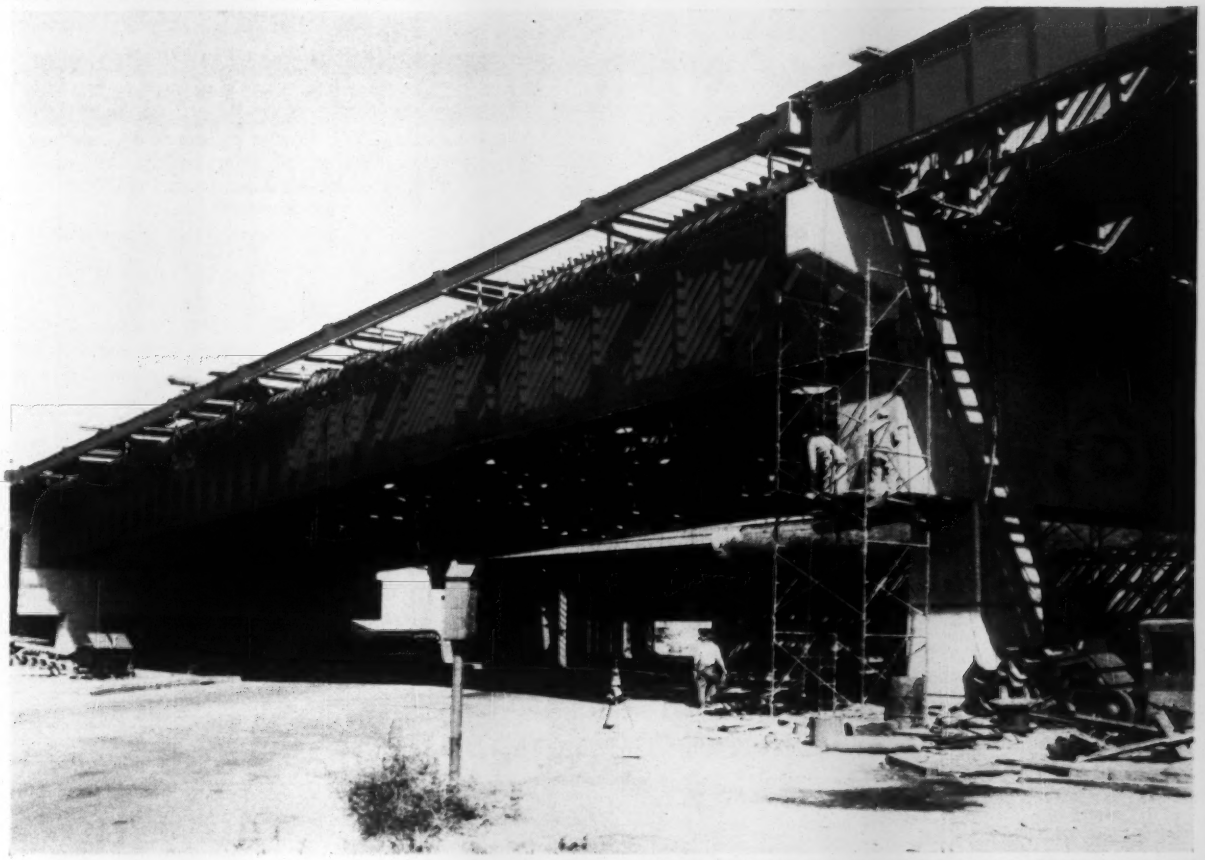
The unfailing light of Dietz Lanterns clearly show the exact location, extent and boundaries of the hazard. Specially designed to burn brightly and steadily in high winds, snow or driving rain.

Use Dietz Visi-flashes to alert the approaching motorist.

Dietz Visi-flash warning lights are the brightest, safest, most trouble-free flashers on the market. They give far-carrying warning that can be seen from either direction, and over wide angles. The Dietz Visi-flash warns, "danger ahead."

Go DIETZ and you go Safely

look ahead with LEAD



Calumet Skyway Toll Road, the final link in the tollway stretching from New England to New York to Chicago. Engineered by De Leuw, Cather & Co. under the Department of Public Works of the City of Chicago.

RED LEAD to corrosion-proof New Chicago Super-Skyway

In Chicago, the new 7½ mile Calumet Skyway Toll Road will run for over half its length on steel underpinnings. To make sure this vital foundation stays free from rust and corrosion, Red Lead primer paint has been specified for the entire structure—using American Association of State Highway Officials "specs."

Red Lead protects against atmospheres filled with chemical fumes, against rain and sleet, against almost any kind of creeping disintegration.

That's why 47 out of 48 states have official red lead primer specifications. Throughout the country, Red Lead has proved itself, in action, the standard for all primers.

Red Lead paint is available to meet the most exacting requirements. Quick-drying . . . low cost . . . extreme corrosive and weathering conditions. For unusual problems, Red Lead specialists are available to help you select the correct formulation for your conditions. Just write today.

S. S. Kenneth McKay, shown here in Port of Capetown, South Africa, is primed with Red Lead paint, first choice on land or sea.

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Lead Industries Association

60 East 42nd Street New York 17, N.Y.

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For unobstructed flow...

Rodney Hunt HY-Q Flush Bottom Closure Sluice Gates completely eliminate the problem of debris and silt which accumulate at the sill of conventional gates. Unlike any other design, the HY-Q gate seats on a sill flush with the invert. It has neither a vertical sill wall nor a trough to trap debris and silt, obstruct free flow and prevent proper seating of the gate. Every opening of the gate flushes and clears the seating surface, assuring full, free, unobstructed flow.

HY-Q® SLUICE GATE

The first basic sluice gate improvement in years features a resilient seal fastened at the bottom of the sliding disc to provide a cushioned closing at the stop bar. This flush bottom closure results in the construction economies of smaller gate sizes, narrower channels and lower channel walls for a given volume of flow . . . and provides unmatched design flexibility for water, sewage treatment and similar projects.

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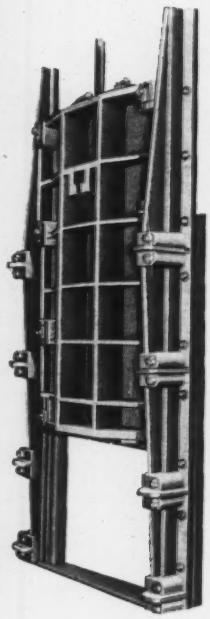

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. . . Reader Comment

Product Correction

SIR—The New Products item on Tractomobile equipment (ENR, Feb. 20, p. 55) shows a picture of a Case loader. I expect someone in the editorial or production departments got the story and picture mixed up.

JAMES M. COSTELLO
Bert S. Gittins Adv. Inc.
Milwaukee, Wisconsin

EDITOR'S NOTE: Mr. Costello is right. The picture running with our Feb. 20 issue item should have appeared with the item "Tractor-Shovel Is Prototype of Series" in Jan. 9 ENR, p. 55. Here are the two pictures—properly identified this time.

TRACTOMOTIVE CORP. tractor-shovel featuring long reach boom.

J. I. CASE CO. tractor-shovel—prototype of new series.

CALENDAR

American Wood Preservers' Association, 54th annual convention, atStler-Hilton Hotel, Los Angeles, Calif., April 14-16.

American Institute of Steel Construction, annual national engineering conference, Chase-Park Plaza Hotel, St. Louis, Mo., April 17-18.

American Water Works Association, annual conference, Memorial Auditorium, Dallas, Tex., April 20-25, 1958.

Southern Municipal and Industrial Waste Conference, 7th annual meeting Duke University, Durham, N. C. May 1-2.

Purdue Industrial Waste Conference, 13th annual meeting, Purdue Memorial Union Building, Lafayette, Ind., May 5-7.

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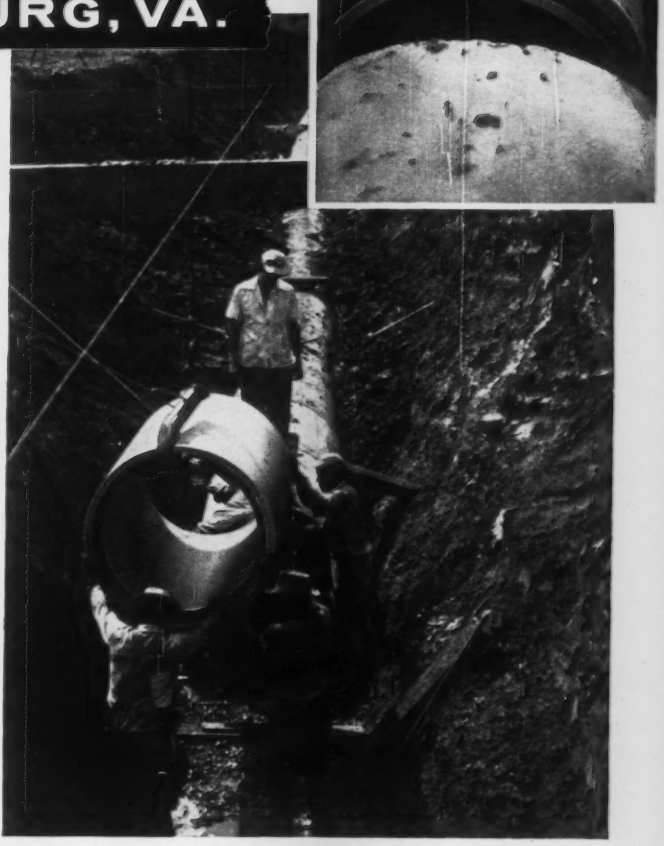

For its new sewage treatment plant, the city wanted long-lasting, low-maintenance lines—built within the budget. Engineers wanted leakproof lines that would *stay* leakproof. Contractors wanted fast pipe-jointing to offset construction problems posed by wet soil conditions . . .
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5026

* **PROJECT:** Sewage Treatment Plant, City of Fredericksburg, Va.

ENGINEERS: Freeman Funk, City Engineer, and Whitman, Requardt & Associates, Consulting Engineers

CONTRACTORS: Abbot and Ritchie, General Contractors, W. C. Spratt, Pipe Contractor, Fredericksburg, Va.

PIPE: TYLOX-Jointed Reinforced Concrete, furnished by Concrete Pipe & Products Co., Inc., Richmond, Va.

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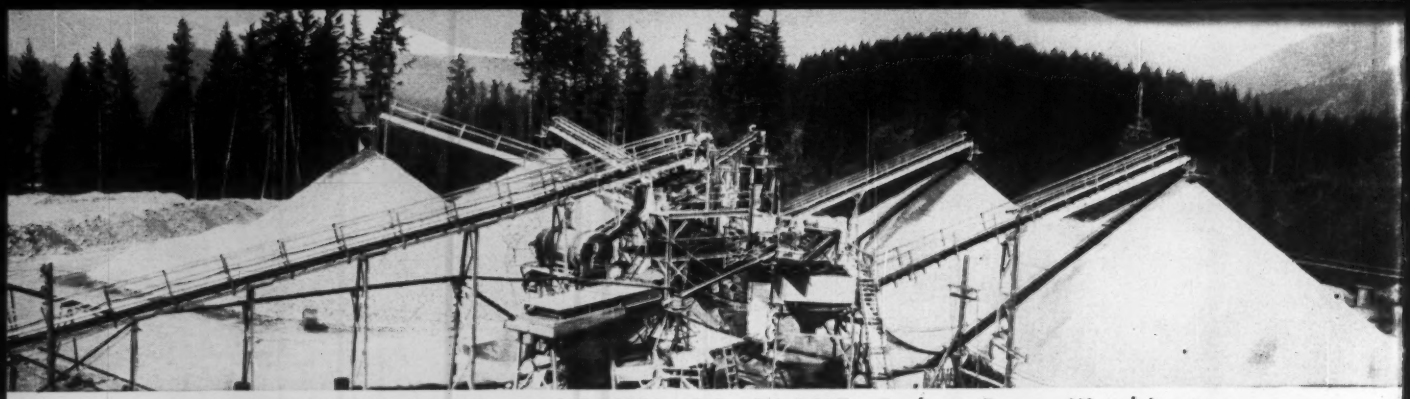
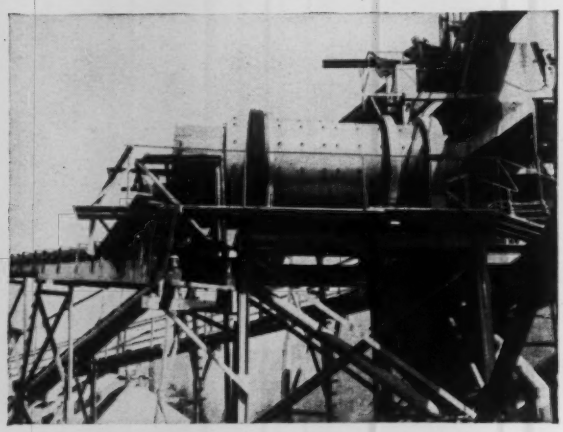


at ASSOCIATED SAND & GRAVEL CO. PLANT, Baker Dam, Washington

Scrubbing was a problem—



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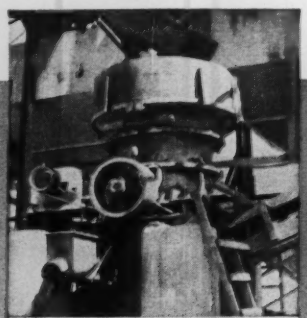
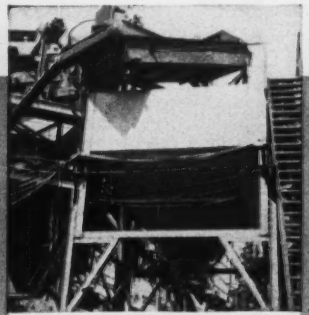
OTHER TELSMITH EQUIPMENT IN THIS PLANT

G-27

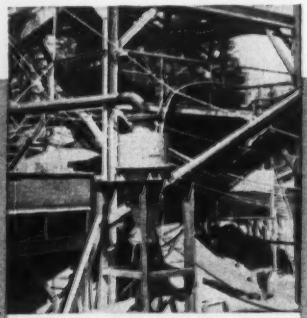
25″ x 36″ Jaw Crusher. Get Bulletin 280.



13-B Gyratory Crusher. Get Bulletin 281.



18″ x 11′ Twin Screw Rewasher. Get Bulletin 292.



24″ DorrClone. Get Bulletin 285.

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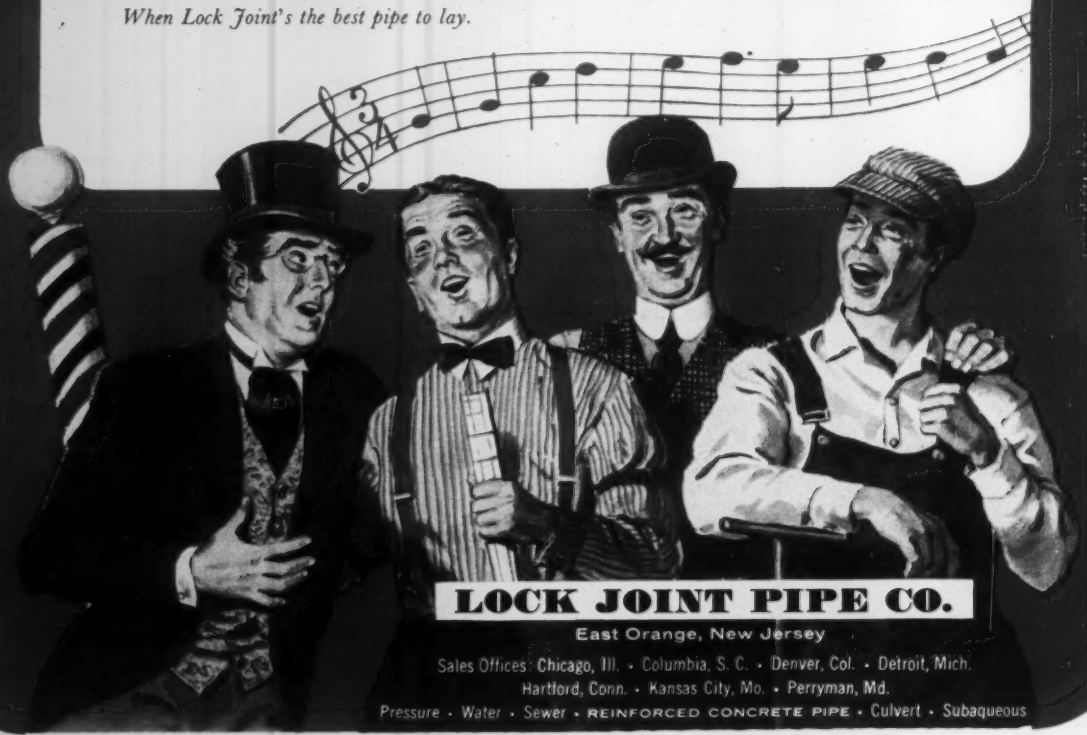

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

LONG-RANGE PORT JOB—New York's Port Authority, eying threats to the port's dominance on the East Coast, has blueprinted a $232 million, 15-20 year enlargement of facilities in the Newark, N. J., area. At Port Newark, $82 million will be put into construction of new vessel berths, transit sheds, and other items. Another $150 million will be used to create a port on a neighboring site along Newark Bay in the city of Elizabeth. The first piece of the investment, a $4.8 million dredging contract, has been awarded to Atlantic, Gulf and Pacific Co. of New York. Another $13.5 million in bulkhead and ship berth construction is due for completion in 1961.

BIG BLAST IS SUCCESSFUL—One of the biggest non-atomic explosions ever set off by man—1,375 tons of high explosives—was eminently successful in pulverizing the submerged twin peaks of Ripple Rock last Saturday. The huge charge moved an estimated 200,000 to 300,000 cu yd of rock to clear a minimum depth of 47 ft of water and thus remove a fearsome navigation hazard in the Inside Passage to Alaska about 100 miles north of Vancouver, B. C. Of more significance to construction, though, is the experience in big underwater explosions that the Ripple Rock blast provides. Next week's issue will carry a full account by ENR's reporters at the scene.

ONE CAPSULE DRAW—The contracting business has often been figuratively called a gamble. This became a literal truth recently when two identical bids of $360,000 were submitted for work at Lincoln Air Force Base, Neb. To break what is believed to be the first tie in 3,500 contracts since 1952 in the Missouri Basin, the Corps of Engineers drew lots as prescribed by law. Five capsules, three empty and the other two containing the contractors' names, were put in a hat. The winner came up on the first draw, Natkin & Co., Omaha. As far as is known, the loser, Ray Martin Co., Lincoln, didn't even get the hat.

ENGINEERING BRAINPOWER WASTED—Too many engineers and scientists are currently employed at subprofessional and nontechnical work, and specialized brainpower is going to waste. That was the consensus of last week's Georgia-Alabama Conference on Utilization of Scientists and Engineers at Georgia Institute of Technology. The group chided scientists and engineers for failing to promote themselves by taking an active part in civic and professional organizations and stressed the need for selling better utilization of technical personnel to top management. Technical output, it was pointed out, can be increased by offering the engineer and scientist more challenging work and using more technicians and computers for repetitive tasks.

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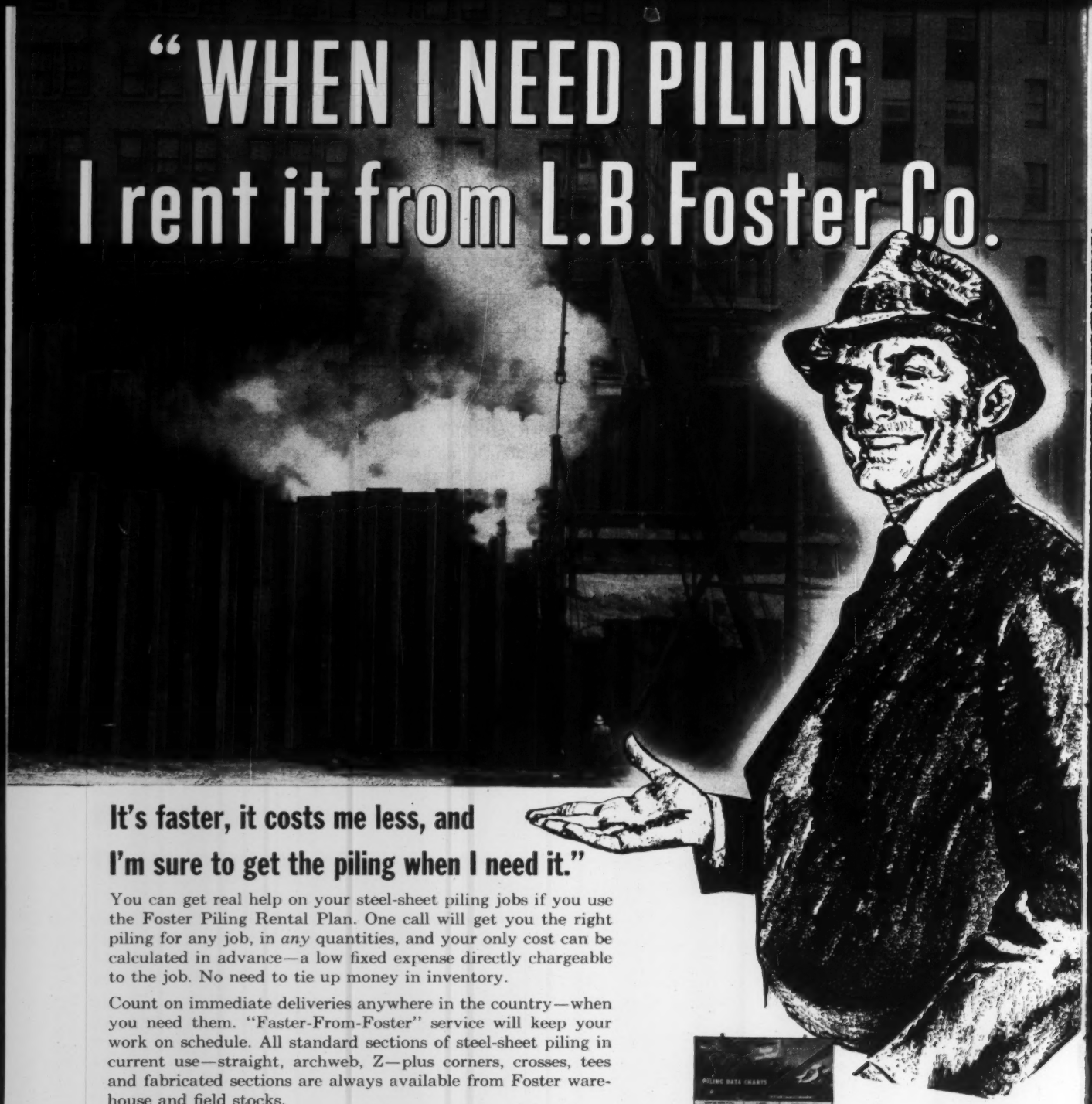

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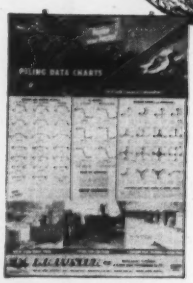

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WASHINGTON OBSERVER

- **Public works or tax cuts as recession cure**
- **Ease on housing credit may up starts**
- **Eisenhower handed $1.5 billion rivers and harbors bill**

● **Is more federal spending for public works what the voter wants as a recession cure? Or does he demand a tax cut?**

Congressmen will be back in Washington next week with their own answers to these questions—the most dynamite-laden political issue today.

President Eisenhower asked for and got a slow-down on public works legislation just before the Easter recess. Then, the Democratic leaders were rushing to vote a $1 billion fund to be lent out to states and localities for public works—highways, airports, sewers, water supply, sidewalks, schools, buildings, and the like. This pump-primer would provide loans up to 50 years at interest rates up to 3.5%. The President and his Republican leaders decided that a new highway law and a new housing law—each calling for billions of new federal grants and guarantees—were enough until after Easter.

Odds still favor the Democrats still sending the local public works law to the White House. Politically, it would be a tough one for President Eisenhower to veto.

—

● **The Administration predicts its prompt easing of housing credit under the new housing law will put private starts this year up to about 1,050,000** —an increase of about 6% over 1957. Adding in Capehart housing for military services, total starts might hit 1.1 million, housing chief Cole says.

President Eisenhower eased up on housing credit to the full extent authorized by the law he just signed. One exception: He gave Fannie Mae only $300 million in new authority to start purchasing at par VA and FHA mortgages up to $13,500.

New limits on FHA mortgages permit down payments as low as 3% on houses valued up to $13,500. But the effect extends all through the range of mortgages FHA will insure up to the $20,000 maximum. For instance, the regulation now permits a down payment of $630 on a $15,000 house, compared to $1,050 before the law was passed.

Builders can now sell under GI loans with no down payment on any house although the borrower still has to pay the closing costs. The permissible interest rate was raised to 4.75% from 4.5%.

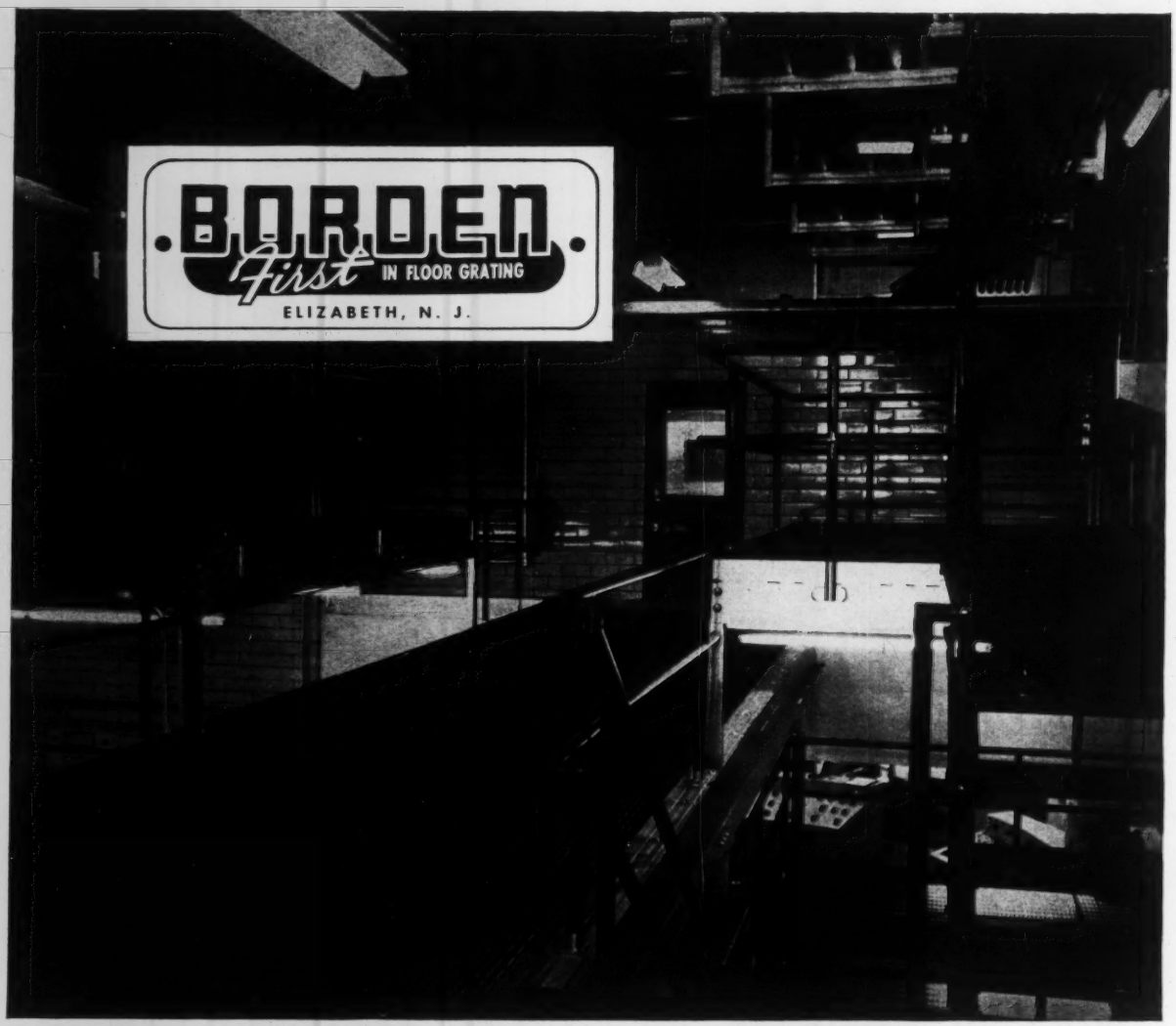
Discount controls on both GI and FHA mortgages were dropped.

Another $325 million was given Fannie Mae for mortgages in urban renewal areas, housing for the aged, and military housing.

—

● **Congress voted a $1.5 billion rivers and harbors authorization bill that would be easy for President Eisenhower to either sign or veto.** He vetoed a similar bill two years ago because it included projects not approved as feasible by the Army Engineers and the Budget Bureau. In fact, 40% of the $1.6 billion total cost came from projects not given Administration approval.

The bill Congress passed before Easter contains unapproved projects costing around $80 million. This is enough basis for a veto if President Eisenhower should stand on principle—but it is also so small that he could call attention to the fact while still signing the law.



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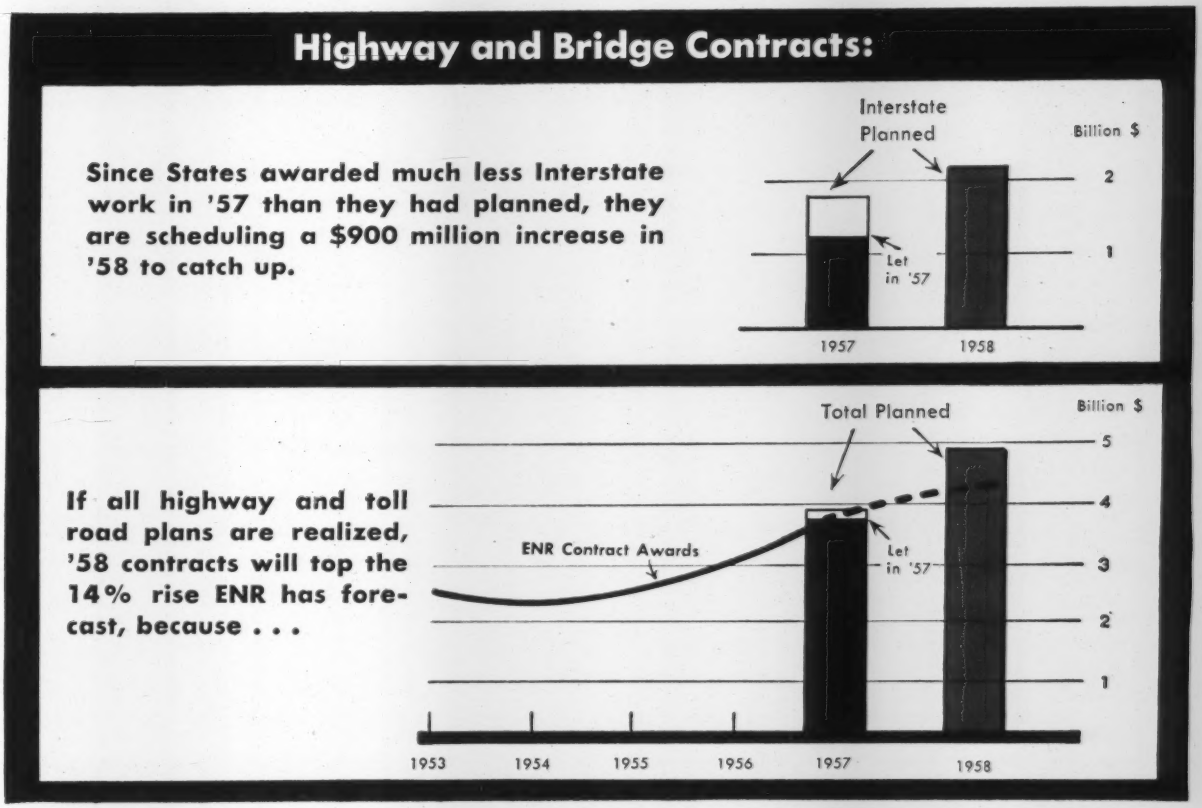


States Have Record Road Plans for '58

If state highway departments and tollroad authorities live up to their plans for 1958, almost everyone connected with highway work will see a banner year.

Reports to ENR from 47 states, the District of Columbia and six toll authorities indicate that they have nearly $4.9 billion worth of road and bridge work tentatively scheduled for award this year. Add to this the more than $500 million that should be let by county and municipal road departments, and the resulting $5.4 billion figure is big—big for contractors, who have had a hard winter; big for material suppliers, whose fortunes are tied to the activity of contractors; big for equipment manufacturers and dealers, who up to now have been trying in vain to find highway business (ENR Nov. 21, 1957, p. 19).

The one segment of the highway picture that is not going to be better off this year than last is the field of the consulting engineer, for while 41 states report using consultants this use is so small in some states as to be negligible. And in most states the trend is definitely towards having highway departments do more of the engineering, private firms less (see p. 23).

• **Biggest plans ever**—The $4.9 billion figure represents the greatest annual state highway and toll construction program ever planned. It is an overall increase of $1.2 billion, 33% above the 1957 awards. This would be the largest year-to-year increase ever recorded—more than twice the size of the 1956-57 increase.

All but three of the reporting states are scheduling more contracts this year than last. And some of the jumps are big. The District of Columbia and 13 states plan to more than double their 1957 pace. They are Vermont, Massachusetts, Rhode Island, Delaware, Virginia, South Carolina, Tennessee, Kentucky, Indiana, Idaho, Montana, Nevada, and Utah (see table p. 22).

Ohio has the most ambitious program: $400 million in total planned awards. New York, California, Pennsylvania and Texas expect to let from $200 million to $290 million in construction contracts.

With only four toll agencies reporting any sizable planned projects, the dollar value of tollroad work is in for a sharp drop, but the extent is questionable. If the Massachusetts Turnpike Authority can raise $150 million for awards, the total toll facility expenditures this year may be as high as 40% of last year's, otherwise it will be only 21% of the '57 figure.

• **Interstate up 86%**—State plans for '58 interstate work anticipate total contract awards in this category in excess of $2 billion—86% more than was let last year. The boost is appreciable even when it is remembered that the actual

. . . Road Picture Looks Good

lettings in 1957 fell some $465 million short of the figure anticipated by the states (ENR May 2, 1957, p. 26).

Present schedules for '58 call for substantial increases both in the ABC federal-aid system (primary, secondary and urban roads) and in highways financed entirely with state funds. The ABC awards are expected to reach $1.7 billion —17% above 1957—while the unaided state work will go to $52.1 million for a rise of 11%.

The aggregate of state maintenance budgets, for work to be done with department personnel, will rise a modest 3% over 1957, with 32 states increasing outlays. Contract maintenance will dip 4%, but 18 states will increase awards.

Equipment buying will decline, largely due to a $20 million reduction in purchase plans by Ohio. However, the total decrease will be only 13% below 1957 figures and the spending by 43 states and the District of Columbia will be $93.6 million—still a big sum.

On the basis of past performance, it is safe to assume that the total increase in highway work during 1958 will be somewhere between the 14% predicted by ENR (Feb. 21, p. 49) and the 33% cited by the reporting agencies. There are still some pretty big IFs.

Right-of-way problems are the most prevalent, and money problems the most serious. At least 41 states are experiencing some difficulties in acquiring property, but 75% of them say they are getting by without too much trouble. As far as money is concerned, all the states could use more of it but only 12 indicate that shortages are going to slow down their construction.

New federal highway legislation may have some effect on the construction plans of individual states, but since the answers to ENR's survey were received before any such legislation was passed, the change would have to be for the better. In short, it appears that come what may, the overall picture for 1958 highway construction is good.

State Highway Programs for 1958 — Contracts...

Reported by state highway departments to ENR, in thousands of dollars, tollroads excluded

STATE AND REGION	TOTAL CONTRACTS Scheduled 1958	TOTAL CONTRACTS Let 1957	TOTAL CONTRACTS Percent Change	INTERSTATE CONTRACTS Scheduled 1958	INTERSTATE CONTRACTS Let 1957	INTERSTATE CONTRACTS Percent Change	ABC FEDERAL AID CONTRACTS Scheduled 1958	ABC FEDERAL AID CONTRACTS Let 1957	ABC FEDERAL AID CONTRACTS Percent Change	STATE FUNDS ONLY Scheduled 1958	STATE FUNDS ONLY Let 1957	STATE FUNDS ONLY Percent Change
Maine	$23,000	$15,100	+ 52	$11,300	$2,100	+438	$11,100	$11,400	− 3	$600	$1,600	− 62
New Hampshire	27,000	19,000	+ 42	17,000	9,600	+ 77	8,000	7,100	+ 13	2,000	2,300	− 13
Vermont	29,800	14,600	+104	19,000	6,300	+202	9,500	7,000	+ 36	1,300	1,300	0
Massachusetts	140,000	68,000	+106	84,000	17,000	+394	40,000	33,000	+ 21	16,000	18,000	− 11
Rhode Island	25,000	11,500	+117	9,500	6,500	+ 46	15,000	4,600	+226	500	400	+ 25
Connecticut	65,000	41,100	+ 58	10,000	19,700	− 49	47,000	17,200	+173	8,000	4,200	+ 90
NEW ENGLAND	**309,800**	**169,300**	**+ 83**	**150,800**	**61,200**	**+146**	**130,600**	**80,300**	**+ 63**	**28,400**	**27,800**	**+ 2**
New York	290,000	279,700	+ 4	85,000	121,300	− 30	130,000	125,400	+ 4	75,000	33,000	+127
New Jersey	90,573	73,700	+ 23	41,373	35,000	+ 18	33,000	22,500	+ 47	16,200	16,200	0
Pennsylvania	250,000	173,945	+ 44	106,000	73,453	+ 44	114,000	79,334	+ 44	30,000	21,158	+ 42
Maryland	68,000	45,925	+ 48	20,000	24,738	− 19	27,000	8,280	+226	21,000	12,907	+ 63
District of Columbia	27,100	13,282	+104	13,500	4,482	+201	10,600	4,300	+147	3,000	4,500	− 33
Delaware	19,000	9,000	+111	10,000	500	+1,900	7,000	0		2,000	1,500	+ 33
MIDDLE ATLANTIC	**744,673**	**595,552**	**+ 25**	**275,873**	**259,473**	**+ 6**	**321,600**	**246,814**	**+ 30**	**147,200**	**89,265**	**+ 65**
Virginia	136,504	52,838	+158	93,504	10,980	+752	40,000	38,709	+ 3	3,000	3,149	− 5
West Virginia	61,300	29,371	+109	45,000	871	+5,066	16,300b	28,500c	− 43	....d	....e	.....
North Carolina	93,000	83,200	+ 12	58,000	37,600	+ 54	28,000	36,100	− 22	7,000	9,500	− 26
South Carolina	104,500	37,704	+177	57,000	5,191	+998	42,500	21,542	+ 97	5,000	10,971	− 54
Georgia	90,000	66,918	+ 34	20,000	3,460	+478	37,000	28,666	+ 29	33,000	34,792	− 5
Florida	125,000	93,564	+ 34	50,000	20,400	+145	24,000	23,000	+ 4	51,000	50,164	+ 2
Alabama	30,500	39,004	− 22	17,500	5,643	+210	11,000	28,919	− 62	2,000	4,142	− 55
Mississippi	58,100	57,156	+ 2	29,200	31,500	− 7	18,950	15,300	+ 24	9,950	10,356	− 4
Louisiana	105,000	72,000	+ 46	50,000	25,000	+100	35,000	27,000	+ 30	20,000	20,000	0
Kentucky	90,500	39,900	+127	53,500	4,900	+992	22,500	19,100	+ 18	14,500	15,900	− 9
Tennessee	128,207	56,264	+128	80,207	9,035	+788	31,000	30,683	+ 1	17,000	16,546	+ 3
SOUTHERN	**1,022,611**	**627,919**	**+ 63**	**553,911**	**154,580**	**+258**	**306,250**	**297,519**	**+ 3**	**182,450**	**175,820**	**− 8**
Ohio	400,000	290,533	+ 38	n.a.	175,832	.....	n.a.	72,489	.....	n.a.	42,212	.....
Indiana	85,000	29,300	+190	47,000	0	.....	35,000	25,300	+ 38	3,000	4,000	− 25
Illinois	197,200	137,600	+ 43	108,500	69,800	+ 55	82,900	56,700	+ 46	5,800	11,100	− 48
Wisconsin	101,000	58,056	+ 74	50,000	10,627	+370	40,000	36,721	+ 9	11,000	10,708	+ 3
Michigan	200,000	170,000	+ 18	74,000	56,000	+ 32	70,000	64,000	+ 9	56,000	50,000	+ 12
MIDDLE WEST	**983,200**	**685,489**	**+ 43**	**279,500***	**136,427***	**+105**	**227,900***	**182,721***	**+ 25**	**75,800***	**75,808***	**0**
Minnesota	81,000	51,409	+ 58	30,000	10,682	+181	39,000	38,227	+ 2	12,000	2,500	+380
Iowa	136,100	93,551	+ 45	55,500	27,531	+102	70,600	44,066	+ 60	10,000	21,954	− 54
Missouri	100,200	76,608	+ 31	56,870	35,516	+ 60	43,330	41,092	+ 5	.....	.....	.....
Arkansas	n.a.	45,149	.....	n.a.	28,533	.....	n.a.	16,310	.....	n.a.	306	.....
North Dakota	51,100	26,277	+ 94	38,000	13,052	+191	13,000	12,877	+ 1	100	348	− 71
South Dakota	45,250	23,972	+ 89	30,000	3,433	+774	14,750	19,103	− 23	500	1,436	− 65
Nebraska	50,350	34,446	+ 46	21,000	5,770	+264	29,000	28,602	+ 1	350	74	+373
Kansas	75,900	63,860	+ 19	40,000	21,427	+ 87	30,900	37,515	− 18	5,000	4,918	+ 2
Oklahoma	66,500	59,818	+ 11	32,000	28,055	+ 14	33,000	30,927	+ 7	1,500	836	+ 79
Texas	250,000	223,600	+ 12	108,000	90,600	+ 19	122,000	118,400	+ 3	20,000	14,600	+ 37
Montana	47,000	22,477	+109	27,500	2,873	+857	19,500	19,600	− 1	0	4	−100
Wyoming	41,250	41,250	0	28,000	28,000	0	13,250	13,250	0	0	0	.....
Colorado f	52,500	50,508	+ 4	22,300	21,272	+ 5	24,100	23,616	+ 2	6,100	5,620	+ 9
New Mexico	45,000	48,752	− 8	25,000	26,990	− 7	19,000	19,800	− 4	1,000g	1,962g	− 49
WEST OF THE MISSISSIPPI**	**1,042,150**	**816,528**	**+ 28**	**514,170**	**315,201**	**+ 63**	**471,430**	**447,075**	**+ 5**	**56,550**	**54,252**	**+ 4**
Idaho	40,350	15,374	+162	30,000	1,998	+1,402	10,000	13,347	− 25	350	29	+1,107
Utah	40,300	16,200	+149	29,000	2,200	+1,218	10,000	12,000	− 17	1,300	2,000	− 35
Arizona	26,000	20,661	+ 26	20,000	11,012	+ 82	6,000	3,497	+ 72	.....h	6,152	.....
Nevada	32,000	13,241	+142	22,000	2,632	+736	10,000	10,573	− 5	0	36	−100
Washington	65,930	45,895	+ 44	32,250	20,756	+ 55	23,576	17,599	+ 34	10,104	7,540	+ 34
Oregon	55,000	40,000	+ 38	28,000	19,100	+ 47	16,000	17,500	− 9	11,000	3,400	+224
California f	270,856	236,658	+ 14	115,704	116,295	− 1	127,526	94,855	+ 34	27,626	25,508	+ 8
FAR WEST	**530,436**	**388,029**	**+ 37**	**276,954**	**173,993**	**+ 59**	**203,102**	**169,371**	**+ 20**	**50,380**	**44,665**	**+ 13**
47 STATES & D.C.**	**$4,632,870**	**$3,282,817**	**+ 41**	.....	.....	.....	.....	.....	.....	.....	.....	.....
46 STATES & D.C.†	**$4,232,870**	**$2,992,284**	**+ 41**	**$2,051,208**	**$1,100,674**	**+ 86**	**$1,660,882**	**$1,423,800**	**+ 17**	**$520,780**	**$467,610**	**+ 11**
Hawaii	16,800	5,990	+180	.....	.....	.....	16,800	5,990	+180	.....	.....	.....
Puerto Rico	20,820	25,039	− 17	.....	.....	.....	20,820	25,039	− 17	.....	.....	.....

* Excludes Ohio ** Excludes Arkansas † Excludes Arkansas and Ohio •a 1958 breakdown estimated by ENR on basis of 1957 •b Includes ABC and state roads •c Includes $20 million ABC roads and $8½ million state roads •d Estimate included with ABC roads •e $8½ million included with ABC roads •f Fiscal years •g Includes engineering, right-of-way, and construction •h State aid projects to be held to minimum to conserve state funds n.a.—not available.

. . . But Consultants' Role in Highway Work Shrinks

Consulting engineers who have been banking on the interstate highway program to provide them with work are going to have to tighten their belts, according to state highway departments reporting to ENR. For with very few exceptions, the states indicate a strong desire to handle all phases of highway engineering with their own forces. Even most of the states that up to now have leaned heavily on consulting engineers expect—or at least hope—to enlarge their highway staffs and cut the use of consultants to a minimum.

There are exceptions, of course, but the picture does not look bright for consultants in the field of highway engineering.

There is no danger that consultants will be completely excluded from the highway scene; even states opposed to their general use will engage consultants for special problems, special structures. But neither is there going to develop the tremendous surge of design or supervisory work apparently anticipated by consultants throughout the country as a result of the expanded highway program.

In fact, the American Association of State Highway Officials reports that the states have only a limited need for consultants now—and that only in design for the states, unlike tollroad authorities, do not generally use consultants for supervision. AASHO, confident of the states' ability to build up their forces, believes the use of consultants—except for the design of special projects such as long span bridges and complex interchanges—will end, quite generally, within a year or so.

The Bureau of Public Roads, while agreeing that consultants eventually will play a lesser role in highway design, doubts that the states can accomplish their hoped-for manpower build-up in anything like the stated time. BPR believes the states now using consultants will continue to do so. These states are concentrated mostly in the northeastern section of the country. To a lesser (but still appreciable) degree consultants are used in the southeast, but west of the Missouri River their use is almost negligible, in BPR's words.

Charges that the highway program is behind schedule because of inadequate engineering just don't hold water. On the average, the states are on schedule with their federal-aid road work (ENR, Nov 21, 1957, p. 19).

Where there have been major delays in getting road work under way, the time-loss has not been caused by uncompleted designs. Right-of-way problems, difficulties in agreeing with municipalities on urban locations, and shortage of money have been the big stumbling blocks — with the lack of money the biggest of the three.

But none of the delays—except the failure to obtain decisions on urban routes—has held up engineering design. In fact, every delay in construction made it possible for state highway departments to do just that much more of their own design work without outside help.

For many years prior to World War II, consultants were used by state highway departments only to a limited extent, and then only on special projects. At the end of World War II consultants began to assume an increasing part in highway design. Entire highway systems, adequate when gasoline rationing and the military service of millions of men kept vehicular traffic low, suddenly became outdated. Many states, for many reasons, were unable to staff their highway departments properly, and therefore they had to turn to consultants for help.

Use of consultants got its biggest boost when tollroad construction started a few years after the war. Tollroad authorities, with a "one shot" construction program ahead of them could not justifiably build large staffs of designing or supervisory engineers. The logical so-

Maintenance... and Machinery Buying

STATES	MAINTENANCE By Own Forces 1958	By Own Forces 1957	By Own Forces Percent Change	By Contracts 1958	By Contracts 1957	By Contracts Percent Change	NEW MACHINERY PURCHASES 1958	NEW MACHINERY PURCHASES 1957	NEW MACHINERY PURCHASES Percent Change
Maine	$12,800	$12,800	0	$100	$100	0	$1,000	$400	+150
New Hampshire	7,300	7,200	+ 1	.....	.....	....	250	250	0
Vermont	4,000	4,000	0	0	0	....	175	130	+35
Massachusetts	8,750	8,100	+ 8	7,950	7,900	+ 1	1,100	882	+25
Rhode Island	3,500	3,100	+13	.....	.....	....	100	70	+43
Connecticut	12,500	11,500	+ 9	0	0	....	2,000	1,165	+72
NEW ENGLAND	**48,850**	**46,700**	**+ 5**	**8,050**	**8,000**	**+ 1**	**4,625**	**2,897**	**+60**
New York	41,000	40,200	+ 2	500	100	+400	2,500	2,000	+25
New Jersey	13,000	13,000	0	0	0	....	275a	275	0
Pennsylvania	48,129	40,053	+20	0	0	....	5,773	5,565	+ 4
Maryland	6,300	6,200	+ 2	900	800	+13	700	434	+61
District of Columbia	775	750	+ 3	780	770	+ 1	150	135	+11
Delaware	4,590	2,852	+61	150	250	−40	400	326	+23
MIDDLE ATLANTIC	**113,794**	**103,055**	**+10**	**2,330**	**1,920**	**+21**	**9,798**	**8,735**	**+12**
Virginia	25,000	24,678	+ 1	5,000	4,722	+ 6	2,000	1,987	+ 1
West Virginia	n.a.	10,500	....	.....	11,500	....	1,500	2,000	−25
North Carolina	42,000	42,200	− 1	.....	.....	....	2,250	3,200	−30
South Carolina	10,000	9,500	+ 5	2,500	2,300	+ 9	750	600	+25
Georgia	11,000	11,615	− 5	.....	.....	....	1,500	1,584	− 5
Florida	12,200	10,150	+20	500	450	+11	2,000	1,279	+56
Alabama	5,000	7,556	−34	..... b	..... b	....	1,000	1,132	−12
Mississippi	6,000	6,180	− 3	0	0	....	250	300	−17
Louisiana	19,000	17,000	+12	0	0	....	1,500	1,500	0
Kentucky	18,500	19,500	− 5	3,500	3,200	+ 9	2,000	3,600	−44
Tennessee	15,000	13,900	+ 8	.....	.....	....	1,000	1,000	0
SOUTHERN	**163,700***	**162,279***	**+ 1**	**11,500***	**10,672***	**+ 8**	**15,750**	**16,682**	**− 6**
Ohio	26,500	30,882	−14	1,500	1,975	−24	30,000	50,000	−40
Indiana	17,000	15,360	+11	165	160	+ 3	3,000	2,500	+20
Illinois	23,450	22,400	+ 5	3,400	3,310	+ 3	1,680	1,690	− 1
Wisconsin	13,500c	12,500c	+ 8	500	550	− 9	0	0	....
Michigan	18,800	17,500	+ 7	2,500	2,460	+ 2	1,100	726	+52
MIDDLE WEST	**99,250**	**98,642**	**+ 1**	**8,065**	**8,455**	**− 5**	**35,780**	**54,916**	**−35**
Minnesota	13,000	12,901	+ 1	3,500	3,212	+ 9	1,000	818	+22
Iowa	10,000	9,468	+ 6	1,000	997	+0.3	1,640	1,330	+23
Missouri	24,300	23,091	+ 5	.....	.....	....	1,000	1,337	−25
Arkansas	n.a.	7,826	....	.....	.....	....	n.a.	1,459	....
North Dakota	4,070	3,192	+28	360	200	+80	370	312	+19
South Dakota	3,000	3,279	− 9	1,000	800	+25	400	0	....
Nebraska	7,300	7,020	+ 4	1,200	1,061	+13	750	735	+ 2
Kansas	10,933	9,916	+10	2,500	2,329	+ 7	1,063	982	+ 8
Oklahoma	8,000	10,691	−25	500	3,068	−84	1,500	1,144	+31
Texas	39,600	38,810	+ 2	0	0	....	7,000	5,331	+31
Montana	5,720	5,720	0	400	474	−16	350	717	−51
Wyoming	3,600	3,537	+ 2	0	0	....	700	600	+17
Colorado(d)	6,300	6,326	−0.4	700	704	− 1	840	841	−0.1
New Mexico	7,000	6,685	+ 5	100	69	+45	600	606	− 1
WEST OF THE MISSISSIPPI	**142,823****	**140,636****	**+ 2**	**11,260**	**12,914**	**−13**	**17,213**	**14,753**	**+17**
Idaho	5,000	4,634	+ 8	1,100	1,311	−16	550	535	+ 3
Utah	5,426	4,644	+17	0	0	....	1,000	297	+237
Arizona	e	3,845	....	0	0	....	450	450	0
Nevada	3,351	3,168	+ 6	0	0	....	800	800	0
Washington	9,692	9,466	+ 2	380	1,178	−68	1,350	1,136	+19
Oregon	11,700	11,300	+ 4	1,500	1,400	+ 7	1,300	1,100	+18
California(d)	34,500	32,500	+ 6	0	0	....	3,000	3,000	0
FAR WEST	**69,669#**	**65,712#**	**+ 6**	**2,980**	**3,889**	**−23**	**8,450**	**7,318**	**+15**
45 STATES & D.C.†	**$638,086**	**$617,024**	**+3**	**$44,185**	**$45,850**	**− 4**	**$91,616**	**$105,301**	**−13**
Hawaii	1,500	1,355	+11	100	0	....	40	165	−76
Puerto Rico	2,330	1,630	+43	.....	.....	....	1,200	1,030	+17

* Excludes West Virginia ** Excludes Arkansas # Excludes Arizona •a Asked for $600,000 in '57 and '58; received and spent $275,000 in '57 •b Included under "Own Forces" •c Counties maintain state trunk roads and are reimbursed by state. •d Fiscal years •e To be reduced: no estimate available. •n.a.—not available. •†Excludes Arizona, Arkansas and West Virginia.

. . . Many states prefer not to use consultants

lution lay in the hiring of consultants. And on the strength of this work, many engineering firms began expanding—not only in number of men employed, but also in scope of work and in geographical area covered.

Small firms whose previous road work was limited to planning streets for housing developments suddenly found a market for their services on a county and state level. Larger organizations that had been doing highway work for one or two states were able to find assignments in many states. Other large firms that had done but little highway work found it advantageous to shift their attention to road design jobs.

When passage of the Federal Highway Act of 1956 spelled the end of the tollroad construction, consulting engineers were not concerned. If anything, they became more confident that their services would be in greater demand.

The amount of engineering required by the toll facilities was great, but it could never equal the amount required by 41,000 miles of interstate highway. Consultants didn't expect a significant time lag; they expected that as tollroad work tapered off, interstate work would build up to an even greater extent. From ENR's current survey of the situation, however, it is apparent that few foresaw the desire of the state highway departments to do all their own engineering, nor did they foresee the shift in availability of engineers that may well make possible a realization of that desire.

Or perhaps the term "expanded realization" would be more correct—for at the present time, at least five states do virtually all of their own highway design work—exclusive of tollroads. These include Washington, Oregon, California, Iowa and Mississippi. One—Oklahoma—expects to do its own from now on. Seven others—Arizona, Alabama, South Carolina, Texas, North Dakota, Florida and Virginia—report that consultants are responsible for only a minor part of design, as little as 10% of the total, and that principally on complex structures.

In the remaining states reporting, the work to be handled by consultants ranged from 20% to 80% of the total. New York, as of January 1, had more than $1 billion worth of work on consultants drafting boards as opposed to $207 million in its own department. Unless the state can quickly recruit a considerable number of engineers, this ratio is not likely to change in the near future.

Pennsylvania is another state that will continue to lean heavily on outside engineers. In connection with just three of its proposed projects there is more than $290 million worth of road work to be designed by consultants. Ohio estimates that of its $400 million in highways planned for 1958, about 40% will be given to private firms.

Indiana, Illinois, Kansas, Utah and Maryland, now giving from 40% to 75% of their design jobs to consultants, do not foresee any pronounced shift in the balance for some time. Massachusetts, New Hampshire and Connecticut are three states that say they may increase the use of consultants.

For the most part, however, the long range prospects for consultants in highway design is pretty bleak, even in states where the balance now favors them. Michigan, for example, which currently has private firms working on the design of $161 million worth of road and bridge projects, is confident that within one year it can handle practically all of its design work with its own forces.

Nevada, with designs planned in 1958 for $25 million worth of road work, expects to let consultants handle $18 million to $20 million of it.

Louisiana, now depending on private firms for design on $25 million in highway construction, expects to be doing all its own work by 1960. Delaware, now doing only 30% of its work, will boost its own design contribution to 50% in 1958. Rhode Island has $26 million in construction to turn over to consultants, but already has exhausted its 1959 allotments—so there is not much chance of the work being done in 1958. New Jersey uses consultants but, according to one spokesman, would rather not.

In general, the attitude of all but a handful of highway departments towards consultants seems to be: "We'll use them when we have to—but we'd rather not". The reasons given are many. According to the chief engineer of one state: "One basic reason for attempting to do more of our own engineering work is lack of quality on the part of consultants, as well as failure to meet delivery dates. Of course, this does not apply to all, but does apply to enough that the entire profession is blamed."

Greatest deterrent to the use of consultants, according to the BPR, is the unsolved question of fees for highway engineering. AASHO and ASCE have

Tollroad Construction Program, 1958

Reported by tollroad authorities and state highway departments to ENR in the thousands of dollars

	CONSTRUCTION CONTRACTS			MAINTENANCE						NEW EQUIPMENT PURCHASES			AMOUNT ON DRAWING BOARDS
				By Own Forces			By Contracts						
Agency	Scheduled 1958	Let 1957	Percent Change	1958	1957	Percent Change	1958	1957	Percent Change	1958	1957	Percent Change	Mar. 1958
By Toll Authorities—													
Illinois Toll Highway Comm.	$8,000	$271,171 a	−97	.....	.....	.....	.....	.....	.....	.....	.....	.....	None
Indiana Toll Road Comm.	None	66	−100	$1,578	$1,286	+ 23	None	None	.....	.....	.....	.....	None
Kansas Turnpike Authority	12,518	4,582	+173	490	480	+ 2	None	None	.....	None	None	.....	None
Maine Turnpike Authority	None	None	.....	500	500	0	None	None	.....	None	None	.....	None
Mass. Turnpike Auth.	150,000 j	None	.....	None	96	−100	None	None	.....	None	308	−100	150,000
New Jersey Turnpike Auth.	2,100	2,000	+ 5	2,000	1,600	+ 25	$500	$500	0	$100	$125	− 20	$2,100 b
New Jersey Highway Auth.	4,500	2,298	+ 96	1,205	1,079	+ 12	360 c	312 c	+15	150	20	+650	4,500
New York State Thruway Auth.	48,200	38,667	+ 25	4,000	4,088	− 2	None	None	.....	None	638	−100	26,600
Ohio Turnpike Commission	None	..... d	.....	1,418 e	1,282 e	+ 11	20 f	28 g	−29	30	80	− 62	None
Oklahoma Turnpike Authority	None	None	.....	300	200	+ 50	None	None	.....	10	9	+ 11	None
Pennsylvania Turnpike Comm.	..... h	5,100	−100	4,414	2,210	+100	1,196	1,860	−36	475	310	+ 53	2,182
Texas Turnpike Authority	None	None	.....	201 i	42 i	+379	None	None	.....	19	112	− 83	None
Washington Toll Bridge Auth.	5,213	24,224	− 78	None	None	.....	112	1,040	−89	None	None	.....	28,749
West Virginia Turnpike Comm.	None	None	.....	280	260	+ 8	None	None	.....	15	8	+ 88	None
By States—													
Connecticut	None	34,400	−100	800	None	.....	None	None	.....	750	1,500	− 50	None
Kentucky	None	None	.....	60	50	+ 20	.....	.....	.....	None	None	.....	None
New Hampshire	None	150	−100	500	325	+ 54	None	None	.....	10	150	− 93	None
TOTAL—Authorities and States	$230,531	$382,658	− 40	$17,746	$13,402	+ 32	$2,188	$3,740	−41	$1,559	$2,952	− 47	$64,131

•a Bureau of Public Roads report. •b Includes improvements and betterments to existing facilities, such as new roadway equipment—lights, guard rails and barriers (to cost $600,000), and painting, plus addition to maintenance building at Hightstown, N.J. •c Includes street lighting. •d Construction of new water line cost $200,000. •e Includes maintenance and operation of equipment, cost of administrative and supervisory personnel, and cost of labor and material for performance of maintenance work. •f Chemical weed control. •g Chemical weed control and some asphalt resurfacing. •h Authority will award $2,182,000 mostly for building of restaurants, service stations, etc., in 1958. •i Pertains to 29.6 miles Dallas-Fort Worth (Texas) Turnpike opened to traffic Aug. 27, 1957. •j If and when funds are available.

a joint committee working with BPR on the fee question. The Consulting Engineers Council, too, is concerning itself. Insiders say more general use of consultants will be hampered until the fee question is resolved. Objective here is a separate schedule for highway work, based apparently on the contention of highway officials that standardizing has cut the amount of engineering per highway construction dollar to such an extent that ASCE fee curves are too high.

Whatever the reasons, the trend is away from the use of consultants. From Missouri: "We expect to discontinue the use of consultants and use our own forces just as rapidly as possible". From Florida: "We have increased our design staff and plan to use consulting engineers only to augment this staff when necessary to develop contract plans to utilize available funds. Only in the event that substantial additional funds become available will we employ additional consulting engineers". From Ohio: "We believe that the ratio of consultant work will lessen as we are able to increase our own forces".

Where manpower is concerned, many states believe that the shortage of engineers is over, or definitely easing. Typical comments – from Michigan: "From the job applications we are presently receiving it would appear that we will be able to build our forces so we can take care of all our design work in the foreseeable future". From Maine: "It appears, with the easing of the engineering manpower situation, that we will be able to handle the greater part of future work with our own forces".

To add to the consultants competition problem, there has been a tremendous increase in the number of engineering firms interested in highway design. ENR lists for 1956 show 176 such organizations; by 1957 the number had jumped to 264. Charles M. Noble of Ohio, says: "It is believed that consulting engineers have expanded their organizations out of proportion to the increase in the overall highway program afforded by the 1956 Federal Highway Act".

Further proof of the stepped up competitive situation is contained in a comment from Ellis L. Armstrong, director of highways in Utah. He says: "During the coming year we propose to have engineering consultants design nine projects for us. We have offers from 65 qualified engineering consulting firms to accomplish this work". He concludes: "That, in part, may answer the consultants question, 'Where is the design work we have hoped to do on the federal road program?' ".

U.S. Chamber of Commerce Does Favor Private Firms

The following statement to ENR comes from Gerald W. Collins, Manager of the Transportation Department of the U. S. Chamber of Commerce, Washington, D. C.

Your editorial entitled "Pointless Argument" (ENR Mar. 13, p. 156) attributed to the Chamber of Commerce of the United States the view that "the public interest is 'best and most economically served' by public engineering organizations." Such a view is inconsistent with the National Chamber's long expressed concepts and I would appreciate the opportunity of correcting the misunderstanding.

The booklet referred to was published well over a year ago. It is composed of statements made by some 17 speakers who participated in three regional highway conferences sponsored by the National Chamber. Speakers, in the main, were nationally known authorities on the new expanded highway program approved by Congress in June 1956. Statements made and answers to questions asked by businessmen at the conferences were reported in the booklet as they were given. Obviously all the statements made by the 17 speakers could not conform to the policy views of the National Chamber.

The question of private consultants vs. public engineering was never raised during these conferences. At that time the demand for highway engineers appeared to be much greater than all the collective availability. The statements referring to the private consultants were made primarily to stimulate the individual state highway departments into meeting this manpower shortage. I feel quite sure it was not made for the purpose of depreciating the value of private consultants.

We regret that these statements made almost two years ago could be interpreted as they have been. The National Chamber unreservedly supports private enterprise. It has repeatedly recommended the use of consulting engineering firms in the handling of highway and other engineering problems.

GERALD W. COLLINS
Manager
Transportation and Communication Dept., U. S. Chamber of Commerce, Washington, D. C.

670 Foot Arch Dam

One high dam proposed for Middle Snake River

The Pacific Northwest Power Co's newest try at developing the middle Snake River by building a single high dam near the Mountain Sheep location is in for a hard row.

The company's application to the Federal Power Commission is for a 670 ft high, 1.32 million kw dam upstream from the confluence of the Snake and Salmon Rivers—50 miles from Lewistown, Idaho.

The new application comes in the wake of the Power Commission's rejection of Northwest's application to build two dams—at Mountain Sheep and Pleasant Valley. Instead, the FPC recommended a high dam at Nez Perce, overruling its examiner to approve the PNP two-dam proposal.

The new PNP proposal answers one big criticism of the original two-dam scheme by providing 2.7 million acre-ft. of usable storage for power and flood control, almost five times as much as the low-dam Mountain Sheep-Pleasant Valley duo would have.

The commission will hold hearings on the new applications, and in Congress the never-say-die federal high Hells Canyon Dam congressmen will renew last ditch efforts to get Congressional approval of their project.

Preliminary estimates placed on the cost of the high Mountain Sheep Dam are in the range of $245 million. Power could be produced in four years.

The proposed dam would be only 30 ft lower than Glen Canyon Dam on the Colorado River, the highest arch in the U.S. completed or under way. High Mountain Sheep would form a reservoir 58 miles long extending to Idaho Power Co.'s low Hells Canyon Dam site.

The site is three miles below the original Mountain Sheep location. Also down stream of the mouth of the Imnaha River, the dam would leave the Salmon River open for fish migration, it was pointed out.

Kinsey M. Robinson, PNP board chairman, says the company has no plans for any development on the Salmon River, an important fish spawning tributary of the Snake River.

PNP's application noted that "when and if development of fish passage makes construction feasible," additional storage could be developed on the Salmon River to provide a total of 5.7 million acre feet of potentially useable storage, and 2,565,000 kw of power. On the basis of present information, the potential ultimate development would offer more storage, more power than the controversial Nez Perce project.

Truss Roof Will Span Elliptical Coliseum

Construction of a 317,000 sq ft sports arena is expected to start this month in Los Angeles under a $5.1 million contract just awarded to L. E. Dixon Co., of San Gabriel, Calif. Meanwhile, lawsuits arising out of the project are still pending between the Los Angeles Memorial Coliseum Commission, owner of the arena, and Stiles and Robert Clements, architects originally retained to design the job and later discharged (ENR July 25, 1957, p. 28).

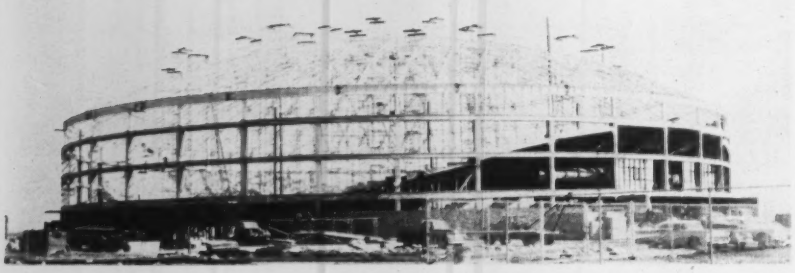
The building will be elliptical in plan. Perimeter columns will support the roof framing, which will consist of steel trusses up to 310 ft long spanning the width of the building parallel to its short axis, and open-web steel joists between the trusses. Slightly pitched toward the edges, the roof will have a maximum height of 75 ft. Fire-resistive construction will be adopted throughout the building.

The structure will be used for spectator sports and also will have 195,000 sq ft available for trade shows. Seating capacity will vary, depending on the event, up to a maximum of 19,000.

An innovation in equipment usage in the building will be the utilization of the same refrigerating machinery for both an ice rink and air-conditioning system.

Construction will take an estimated 540 working days. Excavations already have been made under an unusual arrangement whereby the excavator paid the owner. Two years ago, Guy F. Atkinson Co. paid $23,000 for the privilege of excavating material on the site for use on a nearby highway job.

The architects are Welton Becket & Associates, of Los Angeles, retained last May after the commission voted to scrap a previous design submitted by the Clements firm. Brandow & Johnston, of Los Angeles, are the consulting engineers.



Light Steel Dome Tops Round Coliseum

A domed grid of light steel members arches 262 ft across a new circular coliseum in San Angelo, Tex.

The spherical framework rises 22 ft. It is made up of trussed members 2 ft deep, with double-angle chords and single-angle diagonals. Twelve main ribs of this type radiate from the crown to a steel ring girder encircling the roof. In the 30 deg sectors thus enclosed, secondary framing members parallel the ribs and intersect one another in a diamond pattern.

Below the ring girder the structure is reinforced concrete frame. Outside walls rise 47 ft—12 ft of brick topped with 35 ft high insulated metal panels.

Costing about $1 million, the building will contain 99,000 sq ft of floor space, including a 100 x 204 ft arena. Seating capacity in the auditorium will be 5,400. Adjacent parking lots will hold 2,600 cars.

Architects-engineers for the job are Mauldin, Ballard & Associates, of San Angelo. The roof structure was designed, furnished and erected by Roof Structures of Texas, with headquarters in Austin. The general contract is held by Evans & Taylor, of San Angelo.

Trench Definition Argued; Cave-in Case Dismissed

Alvin Keillor, president of Keillor Construction Co., Ltd., of St. Thomas, Ont., was acquitted of having violated the Ontario Trench Excavation Protection Act when six workers were killed in a cave-in last August while working on a pumphouse at Dresden, Ont.

Magistrate I. B. Craig, pointed out in his judgment that the legislation did not define what is meant by trench width. The prosecuting attorney argued that it is the width at the base of the excavation. Defense counsel maintained that it meant width at the top. (The law says that when depth exceeds width the excavation is a trench and must have its sides shored or sloped 45 deg.)

The cavity was irregular in shape, 32 to 33 ft deep and 20 ft wide where the men were working. At the top it was from 55 to 60 ft wide with slightly sloping sides.

The magistrate dismissed the charge with a recommendation that the Ontario Department of Labor amend the Trench Protection Act so that its wording would be more specific.

Contractor Keillor had not done this: he did not consider the excavation a trench. In his testimony he admitted he was ignorant of the existence of the act, which was passed by the Ontario legislature in 1954. Confronted with the contract he held with the town of Dresden—which specified that the contractor should abide by the trench excavators protection act—Mr. Keillor said he had not read the contract in its entirety.

Briefs

• **Dam license sought**—Application for a Federal Power Commission license for the 56,250 kw, $18 million Carmen-Smith power project on the McKenzie River in Oregon has been made by the Eugene, Ore., Water and Electric Board. If the license is granted, the board will relinquish an existing FPC license for the 30,000 kw Beaver Marsh project, which is opposed by wildlife interests and for which voters turned down a bond issue.

• **MacDonald Memorial**—A campaign to raise $1 million for a memorial to the late Thomas H. MacDonald top highway administrator, was announced on the first anniversary of his death. Money will be used to establish a Chair of Transportation at Texas A&M College. After his retirement as U.S. Commissioner of Public Roads in 1953, "Chief" MacDonald, began a transportation research program at the Texas institution which will be continued as a memorial to him.

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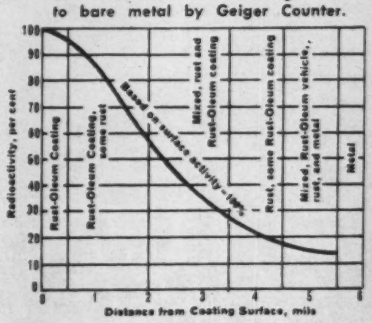

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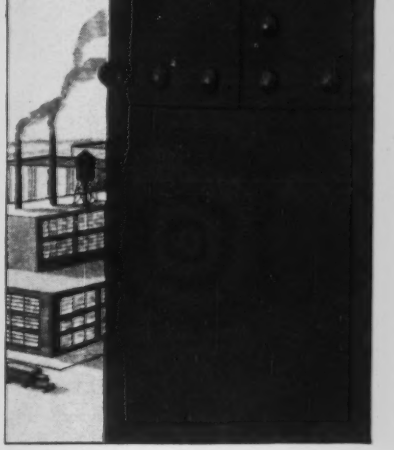

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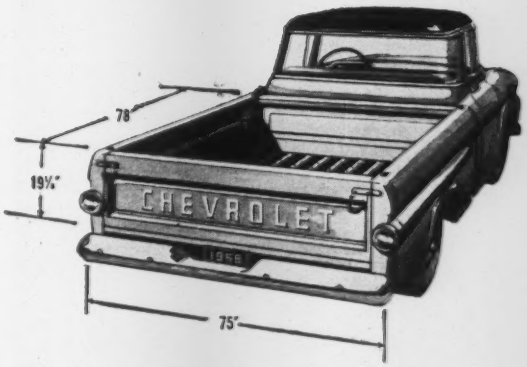


TASK · FORCE TRUCKS

Curves play structural role when . . .

Arches and Catenaries Carry Rink Roof

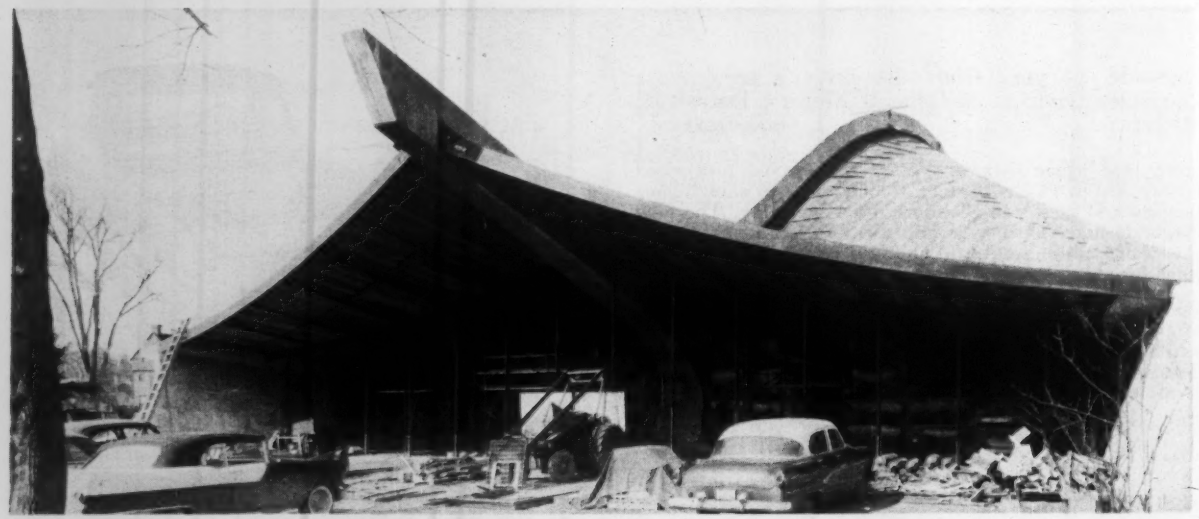
Now approaching completion in New Haven, Conn., is an odd-shaped building. Intended for use as a hockey rink, with seats for 3,000 spectators, the 324 ft long structure is enclosed with walls and roof following reverse curves. These curves, however, are not employed merely for appearance; they serve important structural functions.

The wood-plank roof is a doubly curved surface that swoops down and about 90 ft outward from both sides of a high, arched concrete spine and ends at low, curved outer walls. The wood deck is supported on steel cables strung between the arched spine and these walls, which are curved to counteract overturning forces.

• **Column-free interior**—Known as the David S. Ingalls Rink, the $1.1 million structure is being constructed for Yale University. It encloses a 195x85 ft hockey rink, with stands on two sides. Entrances and exits will be located at the ends and middle of the building.

Except for the two arch supports, there are no columns in the interior of the 324x183 ft edifice. The roof is suspended between spine and walls.

• **Dinosaur spine**—Looking very much like the headless spine of a dinosaur, the central supporting member spans 240 ft between supports as a parabolic arch, straddling the length of the rink.



ENTRANCE CANOPY for the Yale hockey rink in New Haven, Conn., is part of the doubly curved wood roof. In this area, however, the cables are anchored in the center to 40 ft concrete cantilevers projecting from the central arch.

Then, with reverse curvature it cantilevers an additional 40 ft at both ends, to support the roof cables over the entrances at the building ends.

The parabolic arch rises to a height of about 70 ft above the rink and about 90 ft above its foundations. From the crown, where it is 5 ft deep, it sweeps on a smooth curve into the abutments. Its thickness varies from 3 ft at the crown to 6 ft at the supports. It is constructed of 4,000 psi concrete, whereas concrete elsewhere in the structure was required to have a strength of 3,000 psi.

To resist unbalanced loading, the spine is laterally braced at floor height, 10 ft above the rink, by concrete struts.

• **Archlike walls**—Sharing the roof load with the spine are two exterior walls, designed to take the lateral thrust from the cables that span transversely between them and the spine. Constructed of reinforced concrete, the walls are 9 in. thick above grade and slope outward at a 15 deg angle. In plan, they each consist of two reverse-curve parabolas connected by a 160 ft radius arc.

In resisting the lateral thrust, the walls act like a curved, vertical cantilever beam. Sliding at their base is prevented by three concrete struts that pass under the rink between the wall footings.

To take the thrust of the cables and distribute it to the walls, an inclined arch, curving with the walls, is provided atop them. From this reinforced concrete member, which is 7 ft wide by 18 to 22 in. thick, the thrust is carried to the wall for the most part, but its arch action is clearly necessary at openings in the walls.

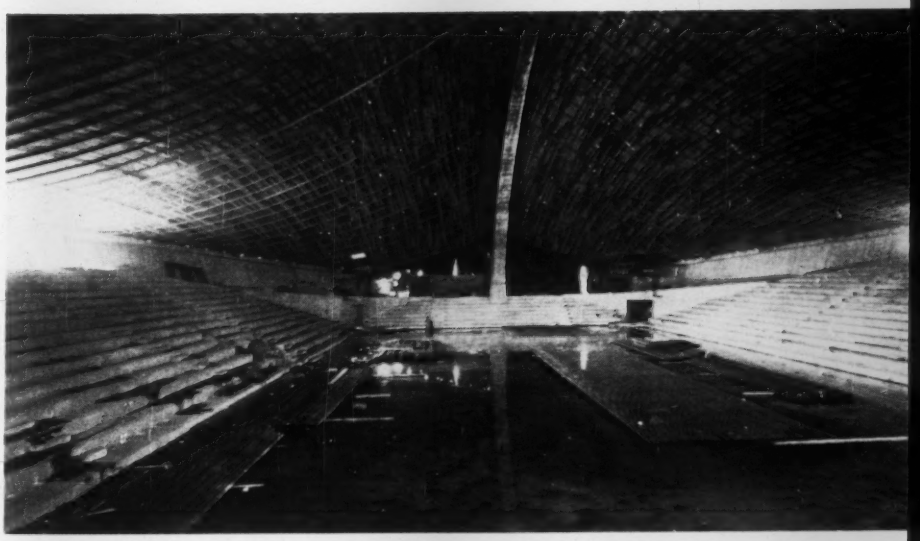
• **Suspended roof**—The main transverse cables are connected to the inner edge of the arches and the sides of the spine at 6 ft intervals. Supplementing them, to prevent vibration and flutter and to take unbalanced roof loading, nine longitudinal cables are provided on each side of the spine. Prestressed to carry the equivalent of an 8 psf roof load, to counteract unbalance, these strands span between four nearly horizontal steel trusses that rest on the walls and on the spine near its supports. The trusses are 6 ft wide and 50 ft long.

Six additional transverse cables stretch directly between the outer walls and the spine to serve as bracing. These strands were prestressed to 60% of the allowable unit stress to increase their effectiveness. Together with the spine and longitudinal cables, they were designed to resist an unbalanced roof load of 20 psf.

The main cables drop 43 ft from the crown to the wall anchorages, 9 ft from the spine supports to the walls, and 11 ft from the ends of the spine cantilevers.

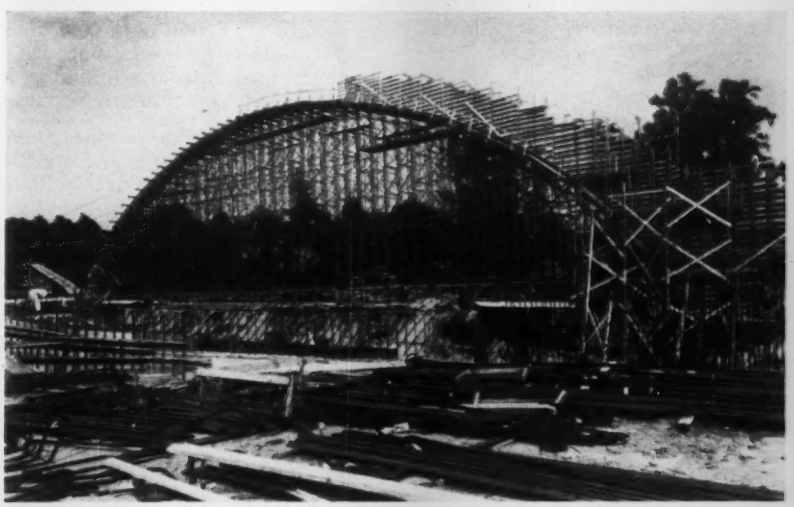
All cables are standard bridge strand. The main cables, to which wood nailers are bolted to receive the wood-plank roof, are $1\frac{3}{8}$ in. in diameter, as are the longitudinal cables. The bracing strands are $1\frac{1}{4}$ in. in diameter.

• **Building the curves**—To lay out the reverse curves of spine and walls, the contractor worked with coordinates measured from three straight base lines, one for each of the major elements. The coordinates, which were shown on the design drawings, were computed at 6 ft



HOCKEY RINK is covered with a wood roof hung on cables strung between a central vertical arch, or spine, and horizontal concrete arches atop the exterior walls.

CONCRETE SPINE provides central anchorage for steel roof cables.



FALSEWORK for the vertical arch, which spans 240 ft, consisted of metal-pipe scaffolding. Forms were adjusted to required curvature with jacks atop the centering.

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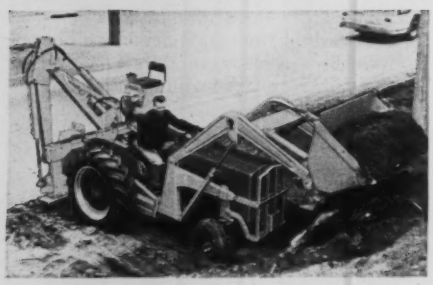

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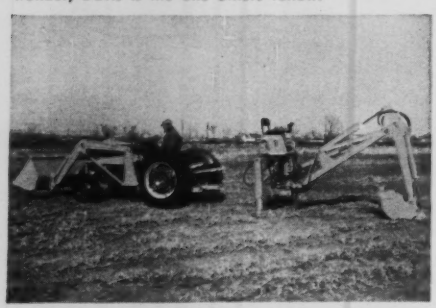

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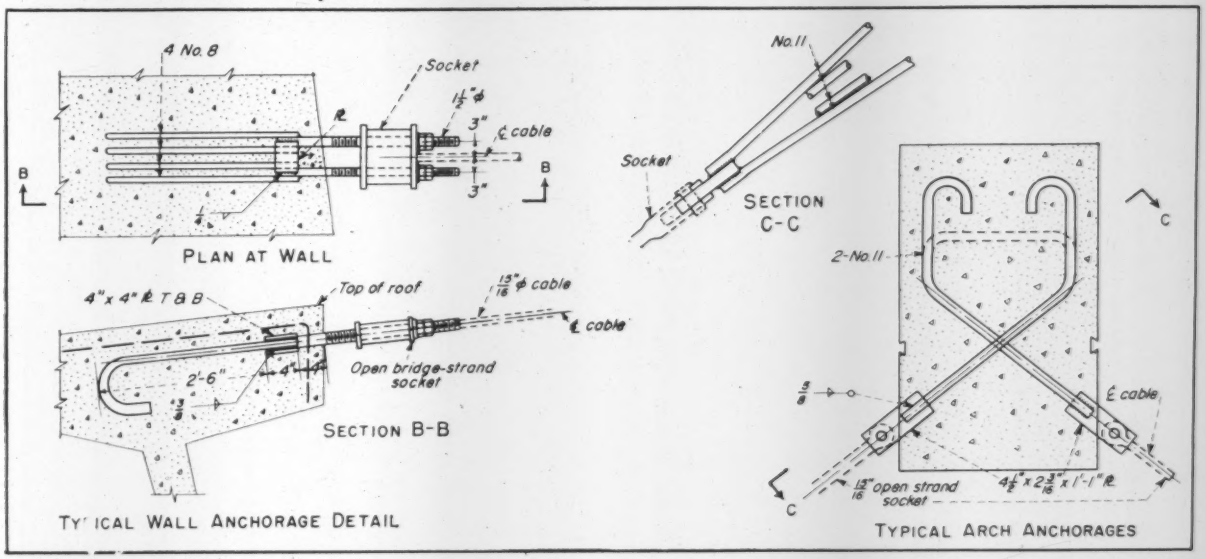
. . . Cables between spine and walls carry rink roof



ANCHORAGES for the steel roof cables at concrete walls and spine consist of bent steel bars embedded in the concrete and to which the socketed strands are fastened. Threaded couplings at the walls permit adjustment of cable tension.

intervals coinciding with the attachments of cables to spine and walls.

Forms for the concrete spine were supported on steel-pipe scaffolding. Jacks at the top of the falsework enabled the contractor to adjust the height of the forms as called for by coordinates measured from a horizontal 2x4 attached to the falsework to serve as a baseline.

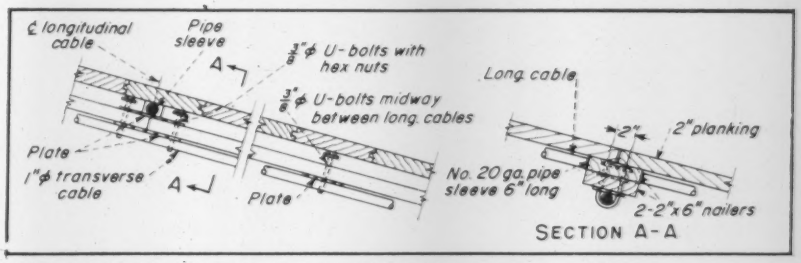
Vertical boards were used for the sides of the spine forms. Concrete was truck-mixed and placed by a crane with a 1 cu yd bucket.

After the spine concrete had attained sufficient strength, the strands, which were delivered to the job cut to exact length and with sockets for anchoring attached, were fastened to the arch. A crane was used to lift them so the connection could be made. Then, a hand winch, set on the wall arch pulled the cables to the anchor bolts embedded in the wall.

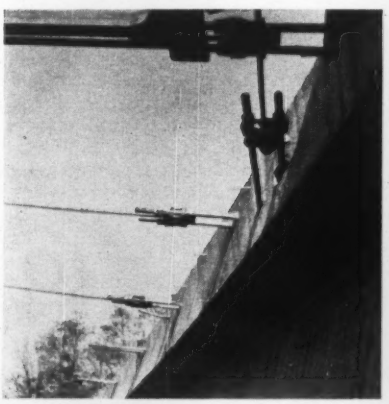
The cables were tensioned with the winch, to assume the desired shape. They were stretched until two lead plugs on the strands near the wall end were exactly 100 in. apart, indicating that proper tension had been applied.

Eero Saarinen & Associates, Bloomfield Hills, Mich., were the architects, with Douglas Orr, New Haven, as associate architect. Severud-Elstad-Krueger Associates were the structural engineers.

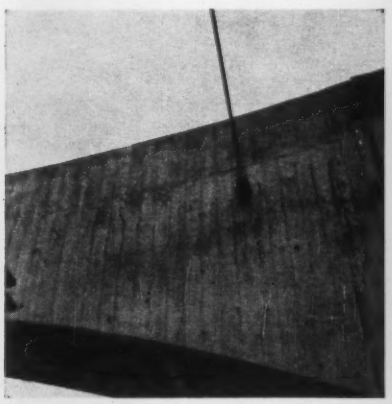
Geo. B. H. Macomber Co., Boston, is the general contractor. Michael F. Collins is general superintendent, John M. Leslie, job superintendent, and Bernard A. O'Toole, job engineer.



ROOF DECK is nailed to wood planks bolted to transverse cables.



WALL ENDS of cables are anchored to an inclined arch atop the wall.



PIN CONNECTION ties transverse cable to the central arch anchorage.

WOOD ROOF spans 6 ft between the supporting transverse cables.

Aerial Photos in Color: Two Views of

With black and white aerial photography now hitting its stride in engineering applications, the next step would seem to be use of color film. Some firms are already offering this service. But there is a good bit of divergent opinion among the experts as to the future of aerial color photography. The views of two such persons are offered below.

Generally, No Advantage is Seen Over Black-and-White

D. R. Lueder
Manager, Columbus Division
Hunting Technical Services, Inc.
Columbus, Ohio

Aerial color photography is not yet known to be, and may never be, suitable for obtaining quantitative information, such as required for contour maps, since it has not been demonstrated that satisfactory dia-positives for the stereo plotter cannot be prepared from color transparencies. Therefore, color photography is now limited to qualitative information obtained through the technique of aerial photo interpretation.

Both panchromatic (black and white) and color photography can be used effectively to conduct aerial photographic interpretation (which allows effective and economical mapping of qualitative terrain conditions, soils, rock, vegetation, geological structure, drainage, water, and minerals without heavy ground survey expense). But is color photography better than panchromatic for such purposes?

In my opinion, the general answer is no. In my forthcoming book, I say: "(there are not) many cases of ordinary application in interpretation where the job that can be done with color photography cannot be as well, or better, accomplished with panchromatic film. Perhaps the results are related to the fascination that colors have for the human brain. One becomes lost in the colors (although photography does not accurately reproduce the spectrophotometric characteristics of the objects which it registers) and neglects significant details. The colors have a tendency to disguise the detail. Panchromatic pictures, however, provide no distraction to the interpreter and force him to use his head in addition to his eyes."

• **Color photography applications**—There are, of course, special applications where color photography can be of great value to practical qualitative mapping.

Color work is useful:

• In geological mapping where extreme detail concerning variations in rock types, colors, and contacts are required (particularly in arid regions, where even high level color photography is possible, and in forested regions where the ground can be seen through the trees). This type of mapping includes mineralization studies, which, if expense is an object, should be confined to localized areas chosen from panchromatic interpretation.

• In geochemical and geobotanical studies, where the probability of color significance is high.

• In forestry studies, where extreme detail of differentiation is sought. This application is particularly enhanced in areas of selective and progressive seasonal change, and if color film such as Aero CD are utilized.

• In specialized ecological studies, such as location of disease stricken forest areas.

• In detailed land use studies where differences in growth patterns at the time of exposure are of significance.

• In certain river, harbor and coastal studies where water and current variations may be expected to be reflected in terms of tonal variations.

It will be noted that the above list includes very little in the way of engineering applications.

• **Limitations**—The most pertinent factors limiting the use of aerial color photography at this time are these:

• Limited time—The time, during any given day, that is suitable for securing satisfactory color photography is about half that for panchromatic. Color film has slower exposure speed and smaller exposure latitude. Since most aerial photographic contracts involve per diem charges that are independent of time in the air, it is obvious that color photography is considerably more expensive than black and white. The actual number of hours per month during which good color photography can be obtained in humid and tropical areas is few indeed.

• Critical exposure—The exposure of color film is critical. Altitude and haze effects must be properly evaluated. This is not always easy, particularly with respect to haze. Moreover, the wide-angle lenses generally required for aerial photography, have a "hot spot" in the center. In panchromatic photography it is possible to compensate for this with a chromalized filter, but in color photography it is not. Usually then, the corners of color photographs appear dark and flare causes deterioration in color rendering. Except in a few areas of the world, high-level, small-scale photography is usually not feasible with color film because of haze effects, while such photography can be taken with panchromatic film.

• Processing film—As might be ex-

Color Can Pay Off Now,

Kenneth E. Hunter
Manager, Geophysics Division
Hycon Aerial Surveys, Inc.
Pasadena, Calif.

During the past few years, aerial color photography has become a new tool which can economically extend the scope of airborne surveying. In essence, color permits collection of a greater amount of geological information through photo interpretation than is possible using black and white prints.

The human eye can distinguish between relatively few shades of gray, ranging from white to black, compared with the many color hues which can be differentiated. Very different colors may even appear as identical shades of gray compared with the many color hues which can be differentiated. Very different colors may even appear as identical shades of gray on panchromatic film. In geology, mineralogy, botany and other

Their Worth

pected with a three layer emulsion, the processing of color film is quite critical and requires great care. Hence, there can be less latitude in both field and base operations. Further, duplicates of color transparencies are far more troublesome to make than are prints from panchromatic film. And color prints at the moment are practically unobtainable and are much more expensive than black and white prints. Finally, dyes in color film have a tendency to fade when continually exposed to daylight or any other light source rich in ultraviolet frequencies.

• **In the future**—Much research and experimentation is being carried out on the use and improvement of aerial color film. For example, there soon may be available a Kodacolor film from which colored prints may be obtained directly. This is a negative material which can eliminate most of the difficulties encountered with transparencies. If this material proves to be satisfactory in practice, it will represent a substantial step forward in the use of color photography.

Because of such continuing research, this article and the opinions therein, indicate the current, commercial status of color photography. It is ventured, however, that procurement, exposure and interpretive disadvantages of color film will be with us for a long time.

and More So in Future

natural sciences, color is often a diagnostic feature and, almost without exception, is evidence that is taken into consideration. Thus, color enhances the ability to interpret photographs by a significant factor.

The criteria used in photogeological evaluation for engineering purposes consist primarily of drainage patterns, topography, erosion characteristics of the surface, vegetation and gray tones in black and white photography. Tonal rendition is influenced by local rainfall or moisture conditions, texture of the surface and seasonal variations in vegetal growth. If, instead of tone, consistent color rendition can be obtained, a new, and often diagnostic, set of facts is added to the criteria of interpretation.

"True color" rendition, which can seldom be obtained, is not important in photo interpretation; it is only necessary to obtain consistent color rendition. Today's color film material is fully capable of producing consistent results when the exposure and processing steps are properly carried through.

• **Applications** — Authorities have pointed out that colors seen in rocks depend on the viewing distance. The viewing distance is, of course, more consistent to an aerial camera than to a ground observer. Color sequences may be correlated with sequences of undisturbed stratigraphic units. Interruptions within color sequences allow recognition of structural complexity and aid materially in its solution. Stratigraphic units having characteristic color may be identified therefrom and may be correlated even if widely separated. Marker beds may be followed through color recognition and color aids in recognition of similar lithologic types.

Hydrothermally altered zones, as well as oxidation and reduction halos, are readily recognized through their color differences with respect to the unaltered rocks. Metamorphism in sediments generally can be recognized by color criteria, and identification of transition zones in igneous rocks and in contact metamorphism is often possible. Direct recognition of secondary minerals through their characteristic colors is often feasible as, for example, the characteristic blue color of Malachite.

And in color transparencies, minor fractures in rocks are generally much more clearly delineated than in black and white prints.

In the geo-botanical field, color photography supplies the only means, short of field work, for determining trace mineral deficiencies in soils through interpretation of vegetation color. In the general field of agronomical science, color photography has proven itself a powerful tool for studies of the general conditions of plants. Incidentally, for soil classification studies where color is a diagnostic feature, aerial color transparencies are unsurpassed.

• **Cost**—As the advantages of color photography gain more recognition, it undoubtedly will become more widely used by the engineering profession in applications requiring accurate and detailed photo interpretation. The cost of color transparencies even now seldom exceeds that of panchromatic photography by more than 50%. Color is expensive to reproduce at present, but black and white prints can be made readily from the positive color transparency for field use and for production of mosaics or indexes.

Research on development of aerial color negative material is showing definite promise of success so that the near future will undoubtedly bring color photography techniques which will permit production of color photo maps and color prints.

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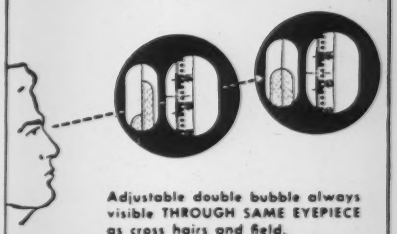

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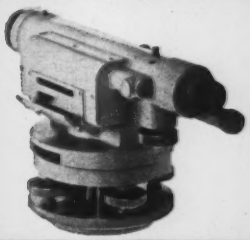

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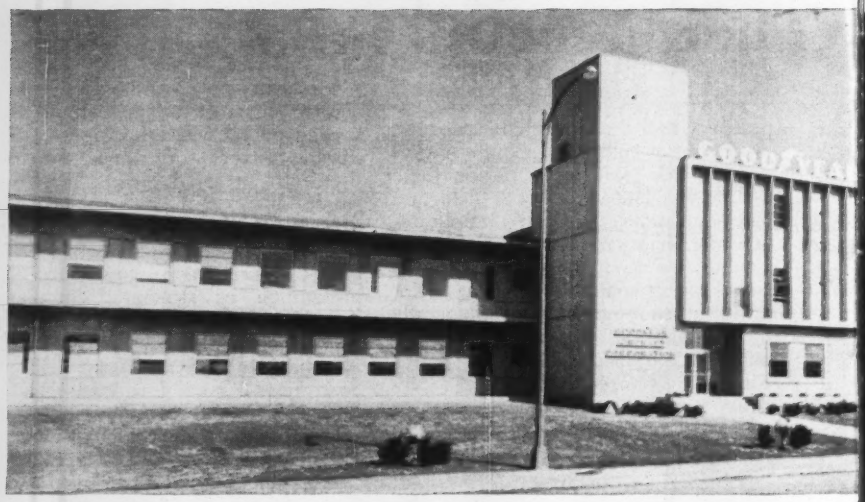


LABORATORY BUILDING, in Akron, Ohio, was enclosed with precast wall panels, placed in an unusual way.

Precast Walls Slide Into Place on Greased

An unusual combination of two construction methods greatly speeded completion of the Goodyear Research and Development Center at Akron, Ohio:

1. The 125x440 ft structure, which is two stories high at the front and three stories high at the back, has floors and roof that were placed by the lift-slab method.

2. The exterior walls are made up of reinforced concrete panels, each 7½ ft wide by 11½ ft high, which were cast on the ground then raised and moved into final position like sliding doors.

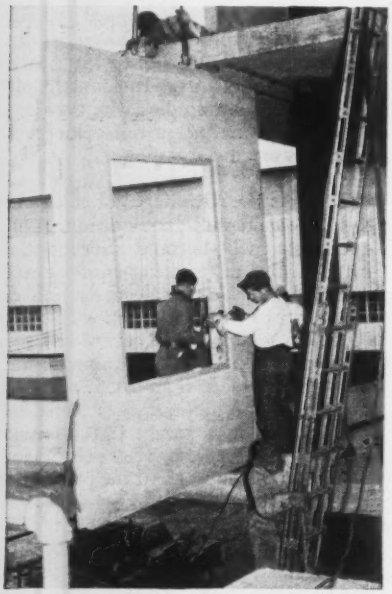
With this combination 30,000 sq ft of wall panels were put in place in 10 working days. Here's how it was done:

The floor and roof slabs were cast on the ground, one atop the other, then raised by jacks on the columns. After erection of the slabs, a channel track was welded to anchors cast in the floor on the wall line. Guide angles were bolted to the ceiling on opposite sides of the wall line, with just enough clearance between them to accommodate the wall panels. The panels, cast with a steel faced grove in the bottom edge, were then lifted and slid onto the track either at openings between the slabs or at the outside edges.

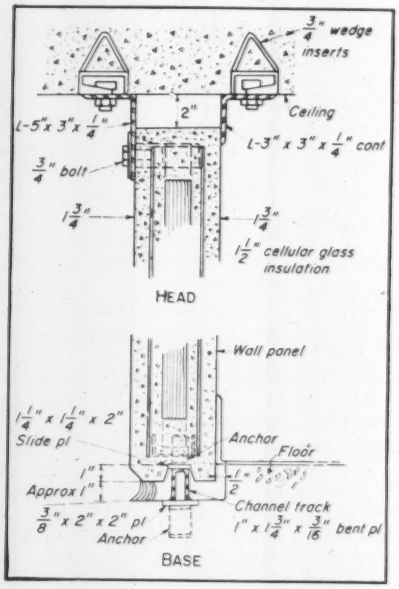
For the first few installations, a jack-equipped roller frame and a hand winch were used in moving the panels down the track. It was found, however, that if the track were greased, two or three men could easily pull the panels down the track into positions that were often 200 ft from the edge of the building.

H. K. Ferguson Co., Cleveland, Ohio, was the architect-engineer for the project, and John Jacobson Con-

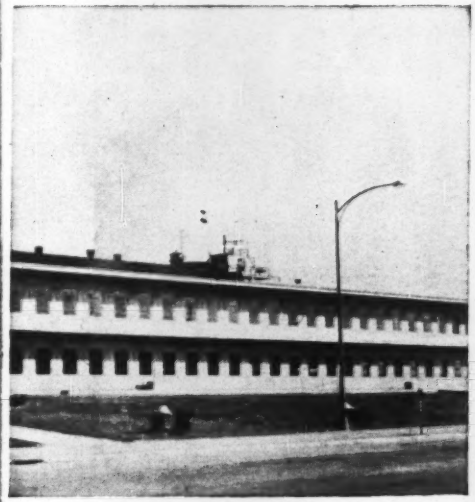
CONCRETE was placed in the wall form around preset sash subframes. The panels have a cellular-glass core.



WALL PANELS supported by cables from a crane, were eased onto the floor track and between angle guides in ceiling.

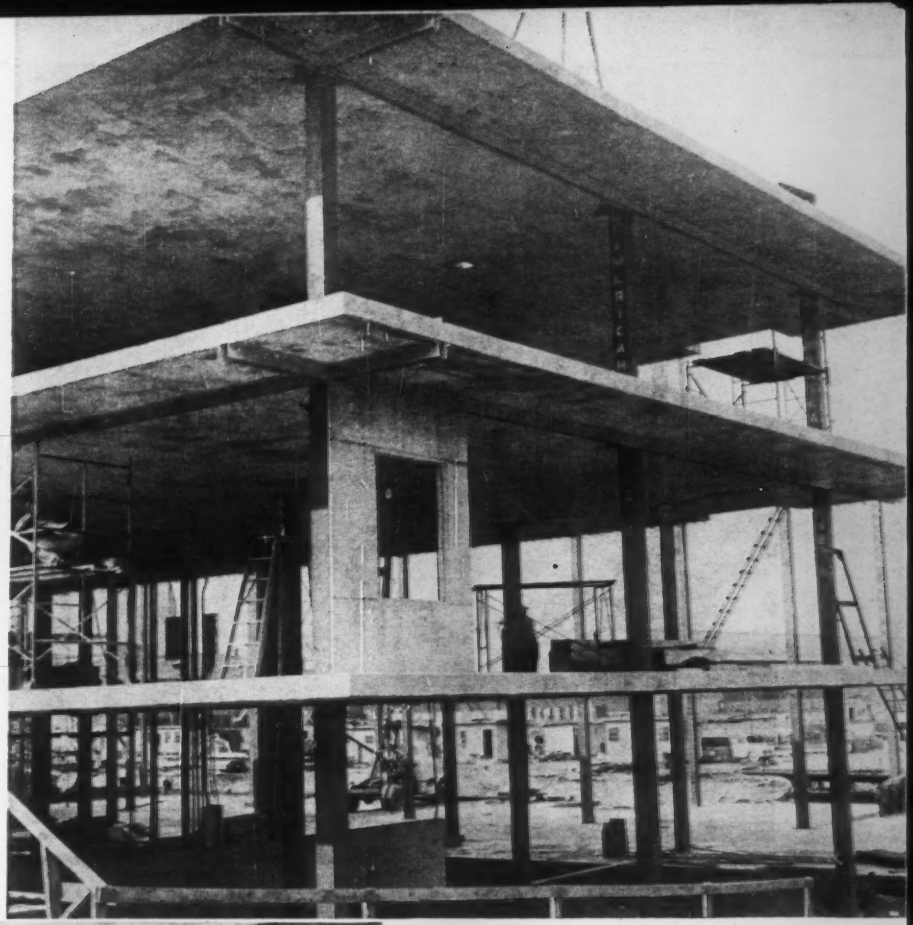


WALL PANEL is fitted with a plate at bottom to slide on the channel track. At the top are guide angles.

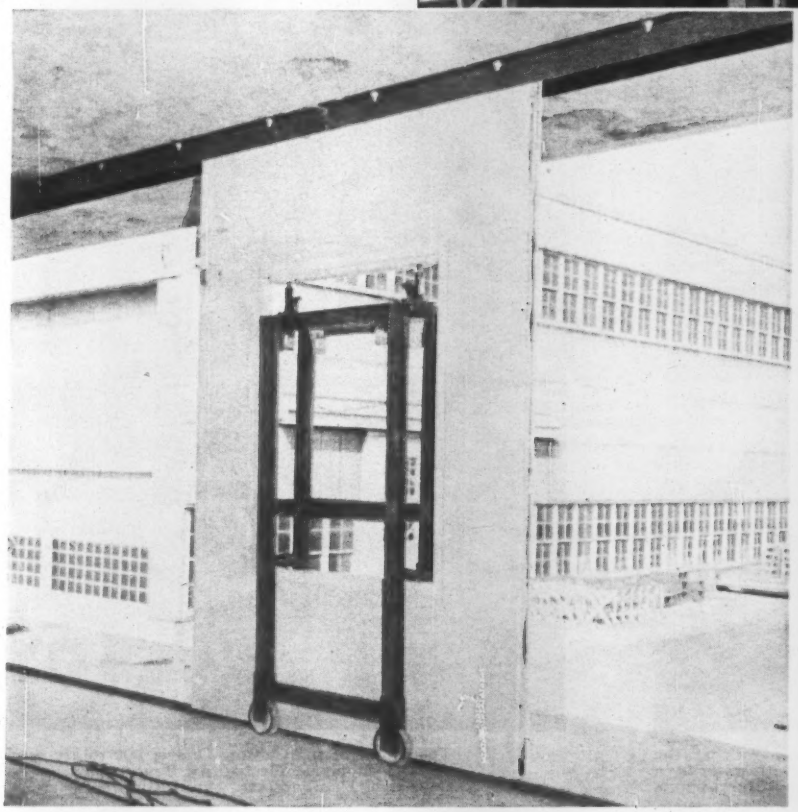


Track

struction Co., Akron, was the general contractor. The floors and roof were placed by Central Lift Slab Company, Cleveland, a licensee of the United States Lift Slab Company, Austin, Texas. The wall panels were manufactured and erected by the Marietta Concrete Corp., Marietta, Ohio.



FLOORS AND ROOF were erected by lift slab methods. Precast wall panels were then moved into place like sliding doors. The panels are of sandwich construction and are 7.5 ft wide by 11.5 ft high.



ROLLER FRAME, equipped with jacks to carry panels was used only for initial panels. When track was greased, the frame was not used because panels slid easily without it.

Gardner-Denver "Air Trac" drills and portable compressors quarrying fill for the Courtright Dam.

Two Gardner-Denver "Air Tracs" drill out rock at the Wishon Dam site.

This monitor is washing down loose rock at the Courtright Dam site. It is supplied with water by a diesel-driven Gardner-Denver 8-in. centrifugal pump.

This is one of the Gardner-Denver 600 rotary compressors supplying air to "Air Trac" drills on the Courtright Dam project.

Here's equipment fit for Kings

The project

Pacific Gas and Electric Company's Kings River hydroelectric project. Its purpose is to supply an extra 261,500 kw. of electricity to California's industrial, farm and domestic consumers. The job includes: (1) constructing the Courtright and Wishon dams, (2) enlarging the existing Balch diversion dam, (3) driving ten miles of new tunnels, and constructing 2000 feet of tunnel siphon pipe, (4) installing two miles of penstock, (5) building the Haas and Kings River powerhouses, (6) enlarging the existing powerhouse.

Gardner-Denver equipment on the job

Contractors working throughout this mammoth project rely on the following Gardner-Denver equipment:

- 3 RP900 rotary portable compressors
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- 1 HT 143 drill unit
- 18 SF93 drifters
- 9 RB94 stopers
- 30 S55D sinkers
- 4 VP4 sump pumps
- 8 8" centrifugal pumps

1100-ft. long diversion tunnel for Courtright Dam. This was driven with two Gardner-Denver SF93 drifters and one DH123 drill mounted on an aluminum guide.

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Construction of new 100 ft lift chamber at existing Wilson Dam on Tennessee River and deepening of downstream canal is proceeding with no interruption to navigation

Canal Juggling

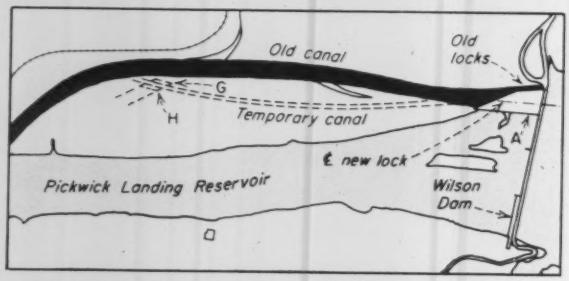
George K. Leonard
Chief Engineer
Warren McMahan
Project Manager, Wilson Lock
Lee M. Ragsdale
Construction Plant Engineer
Tennessee Valley Authority
Knoxville, Tenn.

BYPASS CANAL shown to right of permanent canal's new alignment (dashed line) downstream of dam is key to complex cofferdam movements detailed in drawings below.

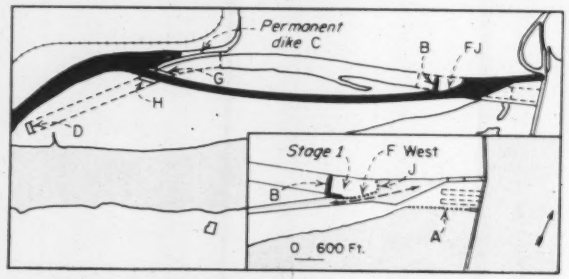
The Tennessee Valley Authority is building a 100 ft lift chamber and deepening a 2.75 mile downstream navigation canal through existing and obsolete facilities at Wilson Lock and Dam on the heavily traveled mainstem Tennessee. Consequently, the overriding consideration is to permit no interruption to navigation during construction.

TVA evolved a scheme, for which no precedent is known, that will mean only three days interruption to river navigation. It involves a bypass canal, employed in much the same manner as roadbuilders use detours, and a series of cofferdam movements resembling on a small scale the river juggling maneuvers at the St. Lawrence Project. And the complicated scheme will allow all major excavation—4 million cu yd of it, one-third in rock—to be done in the dry.

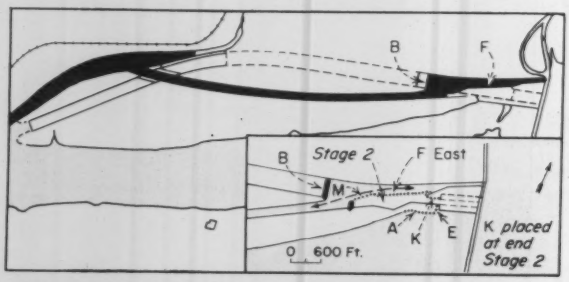
Begun in July, 1956, the $35 million Wilson lock project aims to provide by



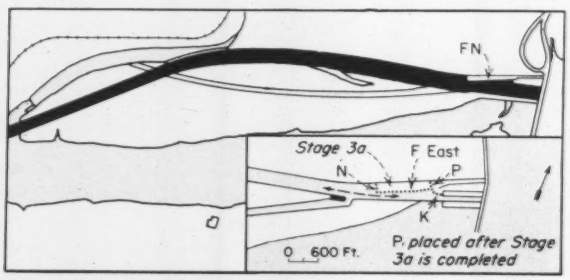
JULY '56 TO JUNE '57: Bypass was dug while navigation used old locks and old canal alignment.



JUNE '57 TO FEB. '58: Navigation switched to bypass while old canal was deepened and new alignment dug.



FEB. '58 TO APRIL '59: Navigation routed from south to north of cofferdam F to allow deepening just below lock.



APRIL '59 TO MARCH '60: Navigation will use new lock and canal while old 90 ft tandem locks are deepened 10 ft.

Keeps Lock Traffic Moving

1959, a new single lock chamber of 100 ft lift at Wilson Dam to replace three outmoded locks (ENR Aug. 30, 1956 p. 34). Two of these, with a total lift of 90 ft, are at the dam. The third lift, of 10 ft, is two miles downstream in Florence Canal. Therefore, the new 100 ft lock at the dam requires Florence Canal to be 10 ft deeper—and navigation obstructions at the present canal's lower end dictated a new alignment for the lower half of the deepened canal. The tandem 90 ft lift at the dam with the lower chamber deepened 10 ft is to be used as an auxiliary lock.

• **Construction sequence**—The complicated construction scheme has four stages, as illustrated in the accompanying sketches, with two down and two to go at this time.

• **July '56-June '57:** Cofferdam A was placed to allow a start on excavation for the new lock. The relocated permanent canal was excavated to grade where the temporary bypass crosses it and dikes G and H were built on final bottom. Excavation of the relocated canal began toward dike D, while the 100 ft wide bypass canal was being dug. Navigation used the detour in June '57.

• **June '57-February '58:** Permanent dike C and cofferdams F-West and J were built and the old canal between them was dewatered to allow start of deepening excavation. Dike B was placed on finished bottom of deepened canal and excavation behind B, F-West and J was completed. Then J and the lower end of F-West were removed, while F-East was installed to the existing concrete wall and short dike was placed from F-West to the shore of Patton Island. Navigation now passes north of F and through the bypass canal. During this period, excavation proceeded below dike H and between dikes G and B.

• **February '58-April '59:** After unwatering the area south of F, the concrete wall below new lock will be removed and excavation begun. Cofferdam M will be installed on final grade just north of F, permitting removal of the remainder of F-West (about 300 ft) and the rock ledge below it in the dry. Meanwhile, excavation between dikes B and D will be completed and dikes G and H removed. When excavation behind F and M is down to grade, the new lock is completed and cofferdam K is placed, M and B will be removed. Finally, dike D will be breached, lowering the water level behind it by 10 ft and putting the old lock out of commission. In about 3 days the opening through D will be large enough to accommodate navigation using the new lock and canal.

• **April '59-March '60:** Cofferdam N will be placed on final grade just west of where J was, and the area behind it and F-East and K will be unwatered and excavated. Cofferdam P will be installed on final grade so that while excavation and construction of the additional 10 ft of depth in the old tandem locks proceeds behind K and P, cofferdams N and F-East, and the rock ledge below F-East, can be removed. This rock ledge, to measure 1,700 ft long, 40 ft wide and 10 ft high, will be excavated underwater.

• **Excavation**—Construction of the project has been divided between a joint venture of Massman Construction Co., Kansas City, Mo., and Farrell Construction Co., Memphis, Tenn., and TVA force account crews. The contractor is responsible for the permanent canal and temporary canal west of dike B while TVA is handling lock construction and excavation east of dike B.

Coordination between contractor and TVA on the carefully timed dike and cofferdam operations is being facilitated by a large scale model of the entire project, which was shown to prospective canal contractors prior to bid time. The model has cutout blocks which can be moved, to represent the various moves required.

Massman-Farrell's $4 million contract involves removing 500,000 cu yd of earth in the temporary canal, and 1.8 million cu yd of earth and 900,000 cu yd of rock in the 300 ft wide permanent canal. Principal earthmovers are two 6 cu yd walking draglines each equipped with a 175 ft boom and capable of spoiling 300 cu yd an hour.

The TVA work at the foot of Wilson Dam is nearly all in difficult rock. The lock area contained solid ledge overlain with a tumbled mass of large limestone slabs, as large as 15x25x5 ft thick. These slabs had been ledge rock which was displaced along horizontal and vertical joints by spillway discharges over Wilson Dam.

The loose rock caused difficulty in placing cofferdam A, a 1,500 ft long sheet pile cellular structure 38 ft high. Most of the slabs had to be reduced in size by drilling and blasting, some under water, before they could be loaded out with power shovels. After the cofferdam was founded on solid rock, the river side was grouted.

The solid rock formation is a shaly limestone streaked with dense chert and flint which was unusually wearing on drill bits, track pads and shovel dipper

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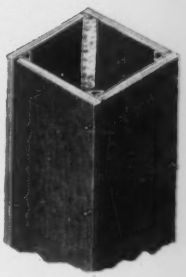

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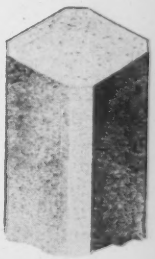

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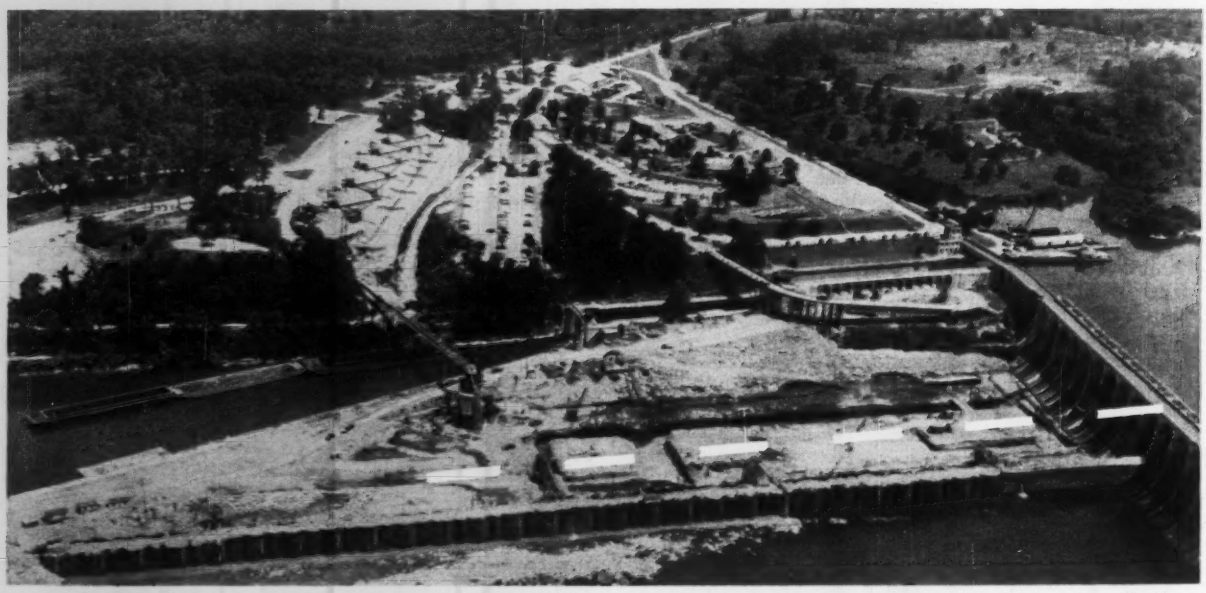


NEW LOCK is located by centerline. Note corkscrew access bridge just below upper of existing tandem locks. Concrete plant near lower end of new lock is conveniently located and is served by conveyor to aggregate storage on river bank above.

teeth. The aforementioned horizontal seams and vertical joints made drilling and blasting difficult. Nonetheless, good progress was achieved.

Wagon drills employing 2 in. carbide-tipped detachable bits worked 6 to 8 ft lifts. Considerable line-drilling on 4 and 6 in. spacing was required at lower levels. Drilled footage of all types averaged 2½ to 2¾ ft per cu yd of excavation. Using Primacord and 40% and 60% dynamite for blasting, power requirement averaged 0.75 lb per cu yd over 225,000 cu yd of solid rock.

• **Corkscrew bridge**—While the unique bypassing scheme with its precisely timed excavation occupies the center of the stage at Wilson Lock, it is by no means the whole story. The work also features a 1,950 ft access bridge to cover a "crow flies" distance of only 800 ft; a novel floating caisson to be used in sealing the upstream face of Wilson Dam while lock filling culverts are tunneled through the dam, and unusually high strength fly ash mass and face concrete.

The only site available for shops and material storage was located on the high north bank which sloped up from the existing tandem locks. Although horizontal distance from the shore abutment to the new lock floor is only 800 ft, the fall of 120 ft occasioned by the need to clear the existing locks, required an access bridge and roadway 1,950 ft long to provide suitable grades (7% maximum) for trucks and heavy equipment moving from plant site to lock floor.

Requiring 600 tons of steel, the access bridge was job-fabricated from salvaged coal conveyor bridges. A through truss span crosses the lower lock chamber on a 5% slope. It connects with a timber trestle that makes a 68 deg turn upstream on a 5% grade which in turn connects with two steel trusses on a 7% gradient that tie into a wood rockfilled crib abutment. Finally a rockfill roadway turns 190 deg on a 5% grade, passing beneath the trestle.

• **Concreting**—The project requires 400,000 cu yd of concrete in a 16 month period that began in July, 1957. The plant, equipped with three 2 cu yd filling mixers and previously used at TVA's Boone Dam, is located at the downstream end of the new lock chamber. Average haul distance is 500 ft. Flat bed trucks carry 4 cu yd buckets from the mixing plant to a rail mounted whirler crane equipped with 150 ft boom. Forms for the filling and emptying culverts are wood, but cantilever steel forms for 5 ft lifts are used for the principal lock wall sections. These forms contain the recently developed sliding panels that facilitate the placing of lock wall protective armor integrally with the main walls.

Fly ash from the nearby Colbert Steam Plant is being used in both mass and face concrete at Wilson Lock. It is recovered by mechanical collectors and averages 70% passing a 325 mesh screen. Colbert fly ash meets ASTM specifications except for fineness (surface area).

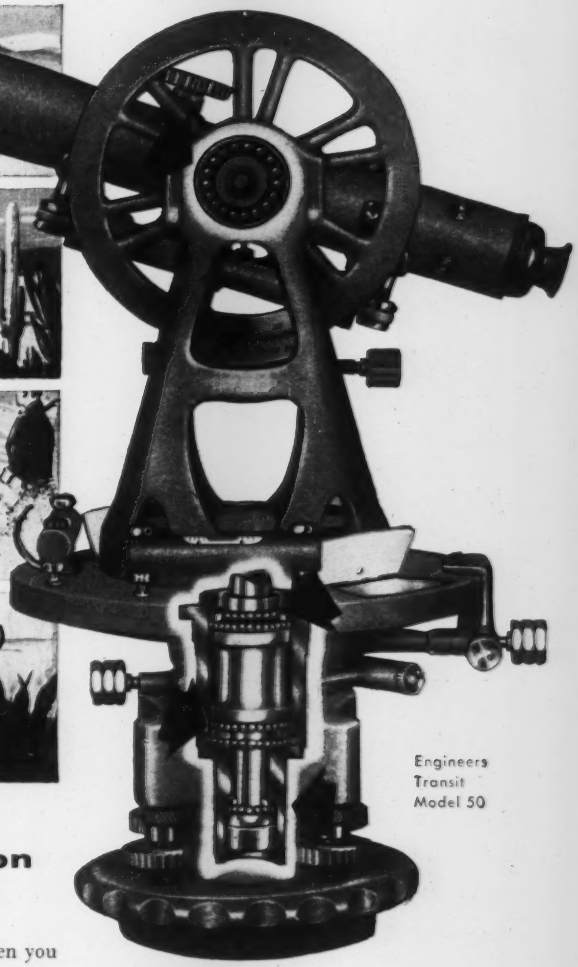
The 30% coarse fraction is regarded as a substitute for fine sand aggregate. On this basis, fly ash is added to the mix in excess of the amount of cement replaced in order to improve workability and obtain higher early (28 day) strength. In the mass concrete, which contains 6 in. coarse aggregate, 32% of the portland cement in the central mix and 8.6% of the sand were replaced by fly ash. In the face mix, where maximum aggregate size is 3 in., 20% of the cement and 10% of the sand were replaced.

Results of tests by Bureau of Reclamation's Denver Laboratory indicated that when 2.3% or more entrained air is present in the concrete mix, the Wilson Lock fly ash concrete has greater durability than regular concrete at all ages. However, without air-entraining agent and if cured less than 90 days before freezing started, it failed at a lower number of freezing and thawing cycles than regular concrete.

Test results on 6x12 in. cylinders indicated that the mass concrete, containing 0.51 bbl of cement and 170 lb of fly ash per cu yd, had a compressive strength of 2,500 psi at 28 days and 3,800 psi at 90 days. The face concrete, containing 0.88 bbl of cement and 182 lb of fly ash tested 3,500 psi at 28 days and 4,800 psi at 90 days.

• **Floating caisson**—The new lock will be filled with water from Wilson Lake through a large culvert in each lock wall. Inlet openings 15x30 ft are to be provided on the upstream face of the dam, 60 ft below normal pool level. With stop logs and trash racks, they will serve as portals for the culvert tunnels to be driven through the dam.

(*Continued on page 44*)



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. . . Wilson Lock construction

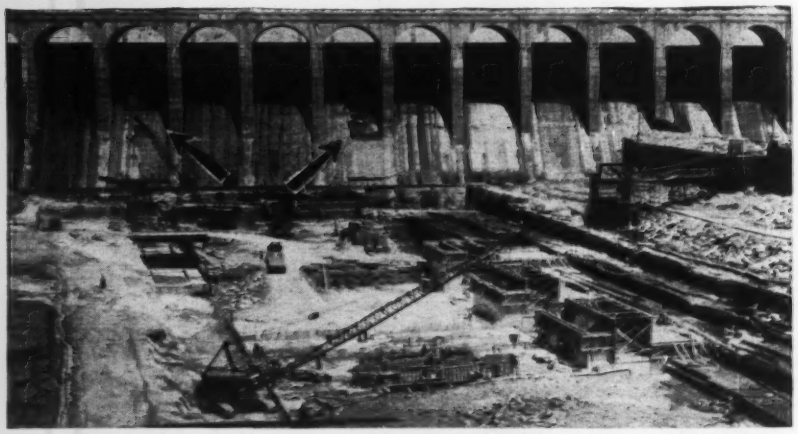
CONCRETING OF LOCK is well under way in this recent photo. Note bypass canal in use at top of photo.

BYPASS CANAL is about completed in this photo. Cofferdam downstream of tows was turned at right angle to bank at right.

A floating caisson was placed this February to seal off Wilson Lake while tunneling is under way. This cellular structure, 40x70x3 ft thick, fits against the upstream face of the dam with the open end above water. Suitable piping floods or unwaters specific cells as required. The water-tight 200 ton welded caisson of high-strength steel is equipped with rubber seals that bear against Wilson Dam's upstream face.

The caisson was towed to the jobsite lying flat. It was turned vertical and sunk to a predetermined depth in front of the culvert opening by flooding six lower cells. Then the water was pumped out and external water pressure sealed the caisson against the dam.

The caisson will be used similarly over the second inlet opening.



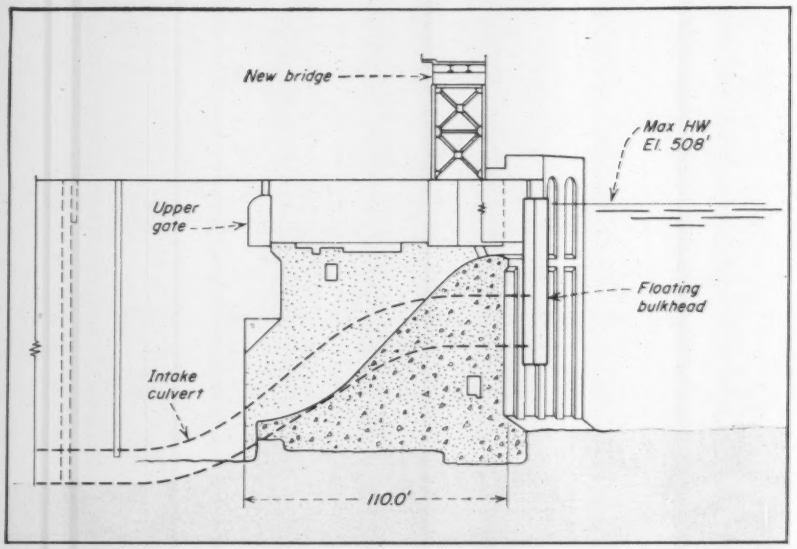
LOCK INTAKE CULVERTS (arrows) are being tunneled through dam.

• **Precast guide wall**—The dewatered area south of cofferdam F will be used to cast a floating concrete wall to guide navigation to the upstream side of the new lock. The articulated structure will be concreted on the relatively level floor of the newly excavated canal close to the mixing plant. It will be floated when the casting area is flooded, passed through the old locks and moved in position upstream from the dam.

The new Wilson lock is being built under the supervision of the TVA Office of Engineering of which the senior author is chief engineer, R. A. Elliot is chief water control planning engineer, R. A. Monroe is chief design engineer, and H. T. Lofft is chief construction engineer.

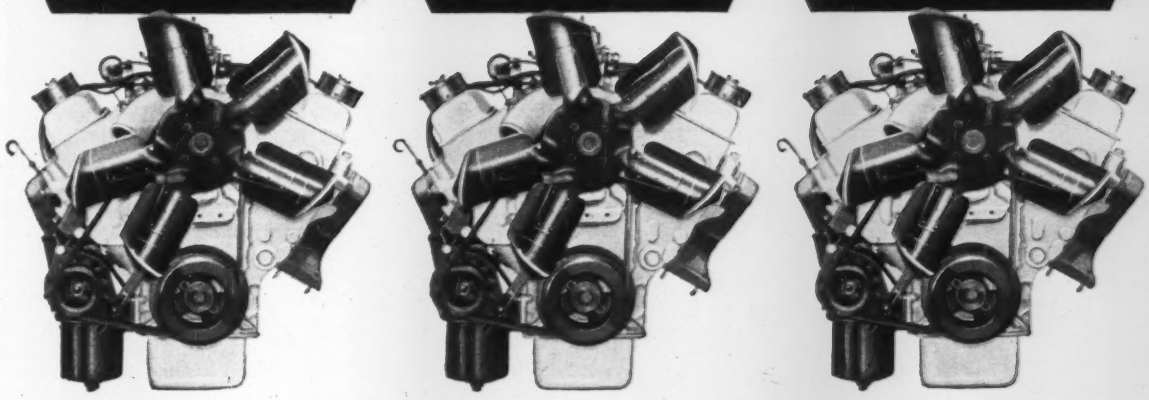
In the field, Warren McMahan is project manager, H. L. Broadfoot, construction engineer, and J. C. McGraw, construction superintendent.

Project manager for the contractor is Robert Puryear.



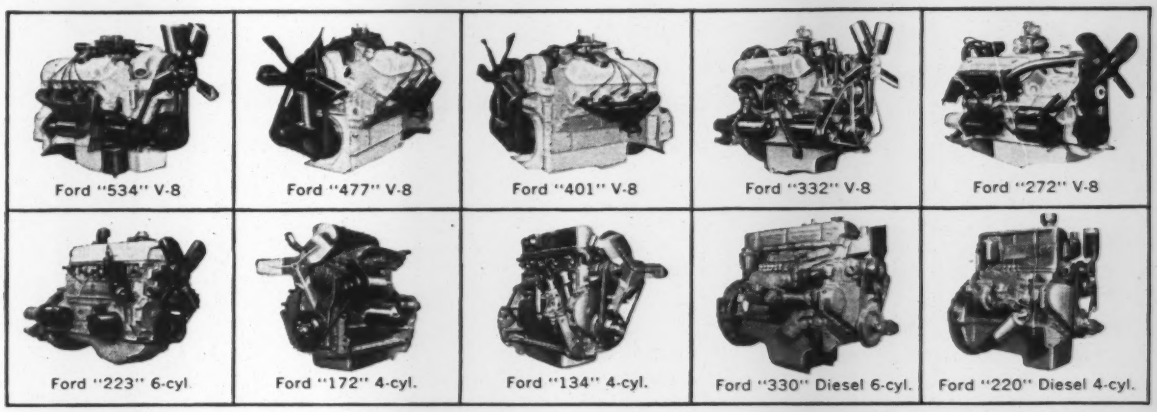
FLOATING CAISSON is being used to seal upstream face of culverts to permit tunneling. Cellular 40 x 70 ft structure is unwatered and hydraulic pressure holds it against dam.

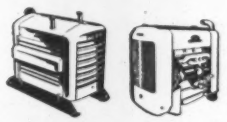
FORD 401 cu. in. **FORD 477 cu. in.** **FORD 534 cu. in.**



NOW, 3 NEW FORD INDUSTRIAL ENGINES . . .

Up to a MIGHTY 534 cu.in.





Meet the new Ford Super Heavy Duty V-8's . . . built to handle the big jobs easier, at less cost. The most modern in the industry, they feature new high-turbulence combustion chambers . . . new fuel induction systems . . . new lubrication systems . . . and provide more horsepower per pound of engine weight than ever before possible.

Check Ford's *full line* of 4-, 6- and V-8 cylinder engines. Most are available as engine assemblies or complete power units, foot- or skid-mounted.

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INDUSTRIAL ENGINE DEPARTMENT
FORD Division of FORD MOTOR COMPANY, P. O. BOX 598, DEARBORN, MICHIGAN

Four Jacks

When the J. K. Welding Co., Inc., took on the subcontract to fabricate and erect 7,000 tons of welded structural steel for the Mianus River Bridge—part of the Connecticut Turnpike—it faced a problem that would call for an unusual solution.

While conventional methods of erection could be used on the approaches and minor spans of the 2,656 ft long bridge, setting in the main girders for the river span of the continuous plate girder structure was not a cut and dried proposition.

Each of the two separated roadways that make up the bridge called for two 295 ft long girders to span 205 ft between piers and cantilever 45 ft beyond. Added to this was a 37 deg skew between the piers that would take the span. And, for one reason or another, the company could not erect the girders by means of traveller, waterborne rigs or falsework.

• **Build at home**—To do the job, the company came up with the following sequence: Fabricate the welded plate girders at its yard in Yonkers; load the two girders for a roadway on a barge and there place and connect the floor beams, distributing trusses and lateral bracing—being exceedingly careful to maintain the proper skew. Then float the preassembled span to the bridge site at Cos Cob, Conn., raise it to just above the height of the piers, float in at high tide and set the girders on their bearings as the tide receded.

FOUR SLENDER JACKING TOWERS raised 335 ton preassembled center spans for the Mianus River Bridge in Connecticut 2 ft at a move for a height of about 45 ft.

TWO 295 FT LONG GIRDERS went into each of two separate roadways, which were fabricated in the yard and floated to the bridge site. Eight girders will make up suspended spans to close gaps.

and Eight H-Beams Put Up River Spans

Then repeat the same procedure to set the second roadway in place.

What had to be raised to a height of about 45 ft was a 335 ton assembly running 295 ft long, 40 ft wide, with a girder depth of 14 ft at bearing points decreasing to 10 ft at midspan and to 9 ft at cantilever ends.

What did the job was a system of four slender jacking towers—mounted on two standard car floats to which the span had been transferred—that raised the span in 2 ft increments until it was just above the piers.

• **Place with jacks**—Each jacking tower was a pair of H-beams set upright, 36 in. c-c, and anchored to grillage welded to the car float deck. These columns formed a slot into which the girder fit. The beams were set with flanges at right angles to the girder. Two lengths of channels spanned the slot and were cross-connected through it to make a seat for an air-driven jack of 100 ton capacity. A similar setup at the head of the jack acted as a seat for the girder.

Head and base of the jacks were secured to these seats, which were free to move along the tower columns. And to hold the jack or girder seat at any point along the tower, removable pins were driven into matched holes drilled through the channels and along the beam flanges.

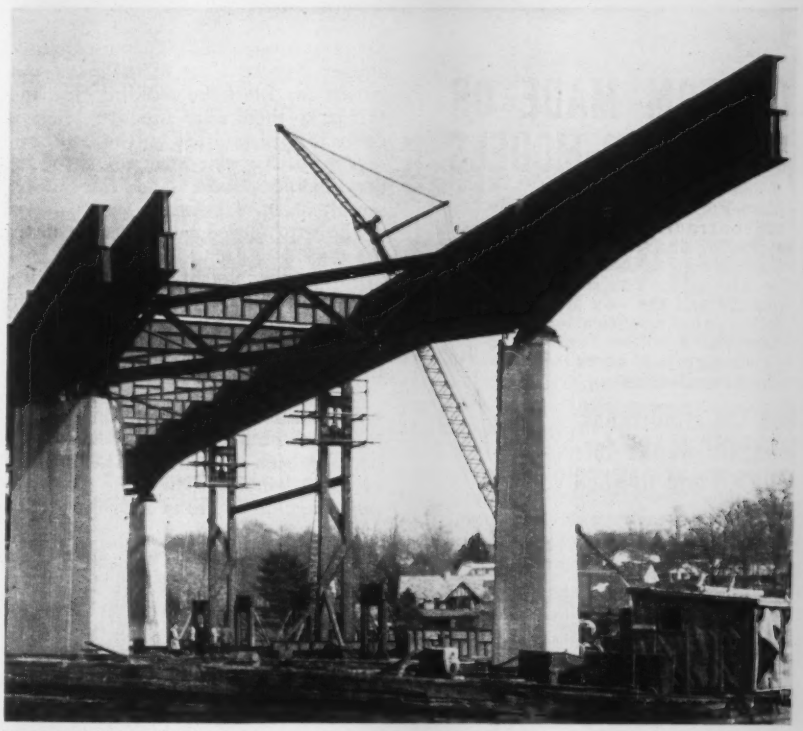
With the towers set two to a girder, the jacking operation went as follows: The seats for the jacks were pinned in place while those for the girders were left free to move. As the air jacks were extended, the girder seats—which were in direct contact with the undersides of the girders—moved up. After the travel of the jacks had been completed, the girder seats were pinned, thus holding the span in place.

Since the jacks were secured to both seats, the jack seats could now be unpinned and drawn up to the next position by collapsing the jacks. There they again were pinned, the girder seats unpinned and the span was ready to make its next move up the towers.

All four jacks were worked together and a close watch kept the span moving evenly up the four towers. And as the span rose, the increasing length of the towers columns between the deck and span was braced with diagonal members bolted across the slot. A degree of stability already had been provided for the towers by strongbacks bolted across the tops of the columns and guyed to the car float.

After about a day of continuous jacking, final height of roughly 2 ft above

POISED ABOVE PIERS, the second set of girders is ready to be set on bearings with help of tide and jacks. Inside girder of first roadway shares common pier at left.



SET ON BEARINGS, the span proves a perfect fit on the reinforced concrete piers, rewarding the extreme care exercised at the fabricating yard.

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. . . Spans went from barge to car floats to piers

FIRST CENTER SPAN is shown during its rise from decks of car floats. After it had been put in place, a second similar assembly, sharing a common inside pier, was raised and placed in like manner to parallel the first one.

the piers was reached. The raised span—already floating close to the piers—was moved in. Both the receding tide and the jacks then were used to bring it down to final position on the two bearings for each girder—four points for the preassembled span. And care in assembly at the fabricating yard paid off as the span settled into a perfect fit on the piers.

The whole operation, from fabrication to erection, proceeded on a tight time schedule. It was carefully planned and carried out to place the spans in the limited period of peak tide.

• **A transfer in-between**—The jacking towers which had done their job so well had also been used in an earlier transfer of the assembled span from the transport barge on to the two car floats from which it was raised.

The assembly barge used at the yard measured 135x54 ft and the ends of the girders overhung it at both ends. Although suitable for transporting, the 135 ft length of the barge precluded its use in the jacking operations (the skew in the piers left only a 100 ft wide channel). This meant that the span had to be reloaded near the bridge site before it could be raised.

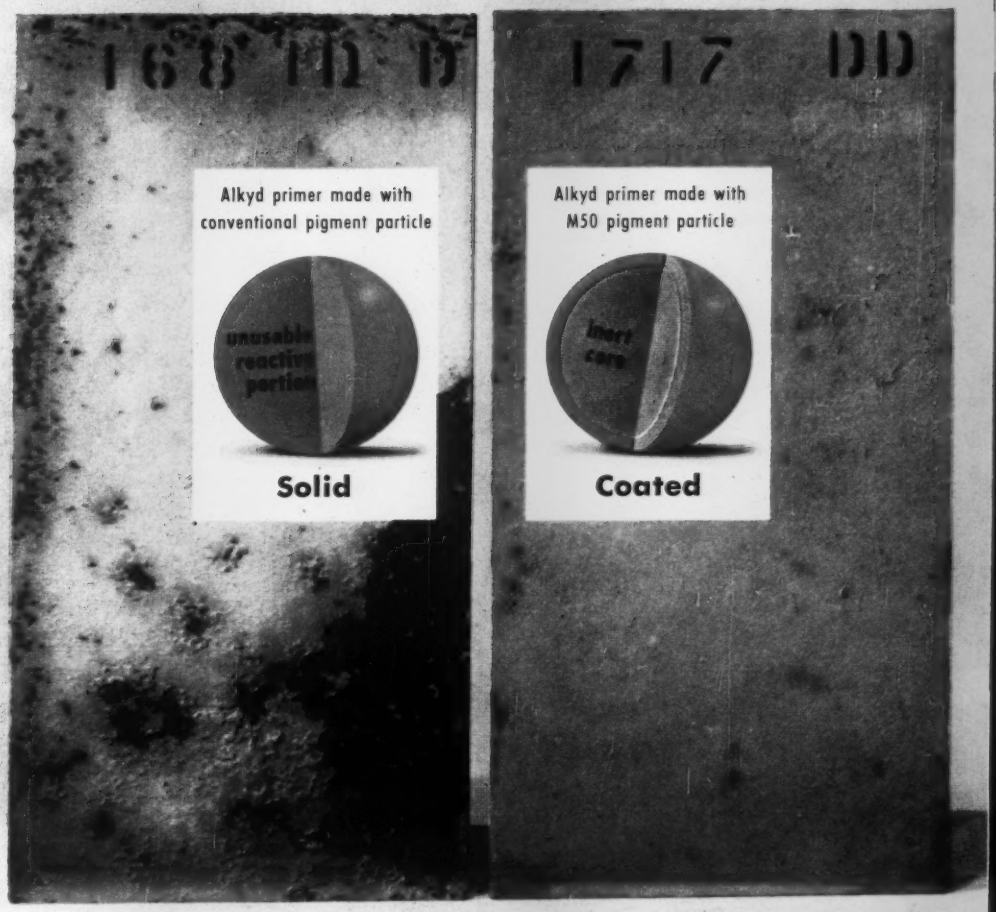
First, two 110x34 ft steel barges were positioned across the bow and stern of the transport barge, and under the ends of the girders. Jacking towers were erected on the steel barges and the span jacked free of the transport barge, which was withdrawn. Two 200x34 ft car floats, properly spaced, positioned and secured to each other, were moved in under the span. The span was jacked down onto temporary bolsters on the floats, and sat so that with the floats placed in the channel, the span was at the correct angle to fit the skew of the piers on which it would rest.

The jacking towers were then reassembled at predetermined points on the car floats.

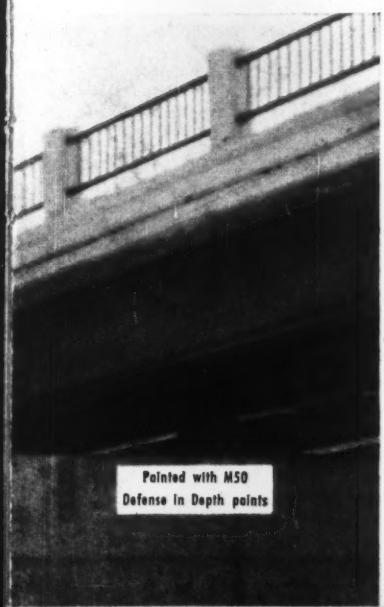
Piers for the center span consist of separate ones for the outside girders of each roadway and a common pier for the inside girders. They are of reinforced concrete and are part of the work by Poirier & McLane Corp., prime contractor on the job. Tippetts-Abbett-McCarthy-Stratton was the consulting engineering firm that was engaged for the project.

J. A. Klevens, president of J. K. Welding Co., Inc., Yonkers, N. Y., was in charge of fabrication and erection operations.

Never before such durable metal protection



Proof M50 pigment Defense in Depth paints deliver up to 300% greater content of rust-inhibitive ingredient



Exposure tests make it plain! Paints containing M50* basic lead silico chromate pigment do more to prevent rust. Look at the panels above. These primers were applied (2.0 mils, dry) over rust and mill scale (to intensify severity of the tests), then exposed 12 months at Perth Amboy, N. J. in an industrial atmosphere and 12 months at Sayville, L. I. in a normal atmosphere at 45° South. Clearly, the rust arresting action of M50 pigment is significant.

Research analysis of tests like this prove an *M50* pigment Defense in Depth paint provides substantially more rust-inhibitive action than comparable paints made with conventional pigments. You can see one reason for this. The configuration of the *M50* pigment particle provides a more efficient way to take advantage of the well-known rust-inhibitive properties of the active ingredients (fused lead chromate).

Second reason for the improved anti-corrosive action of *M50* Defense in Depth paint systems is the versatility of the *M50* pigment. Unlike other rust inhibitors, the inert-core particle is technically desirable and economically practical for use in intermediates and finishes . . . not just in primers alone. *Each* coat in an *M50* pigment system can be given substantial rust-inhibitive properties in its own right. Hence total rust-inhibitive pigment content of some *M50* pigment systems exceeds the rust-inhibitive content of comparable non-*M50* pigment systems by as much as 300%.

See on the next page other ways *M50* pigment Defense in Depth paints step up metal protection. See also how National Lead is prepared to help you get these superior specification products from your regular paint suppliers.

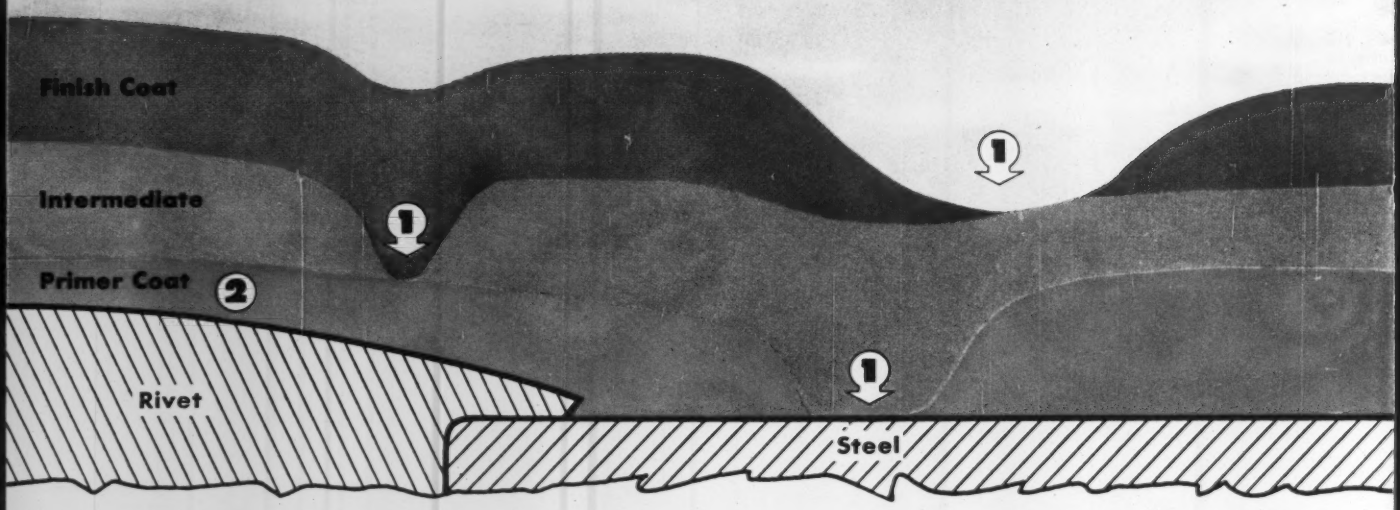
*Registered trademark of **National Lead Company**

General Offices:
111 Broadway, New York 6, N.Y.

For more facts, turn page

(1) "Holidays" in any coat of M50 pigment systems are less harmful . . . all coats provide **both** rust inhibition and weather resistance.

(2) With M50 pigment Defense in Depth paints, thin deposit areas such as rivet heads, have more protection . . . paints "wet" pits and hollows, too.



Schematic section through 3-coat M50 pigment Defense in Depth system shows new paints provide two performance extras

Information on the preceding page proves that *M50** pigment Defense in Depth paints deliver inherent rust inhibition well beyond that available in other anti-corrosive paint systems.

Diagram above shows two additional performance extras. Because *M50* pigment coats give more protection over thin deposit areas . . . because breaks in *M50* pigment coats traceable to damage or painting mishaps are less harmful . . . the need for on-the-job spot priming and touch-up is greatly reduced. Then, too, *M50* pigment primer coats are not only rust inhibitive but also weather resistant. Re-priming is rarely needed.

Other advantages of *M50* pigment paints include a broad choice of colors in all coats, with excellent tint retention.

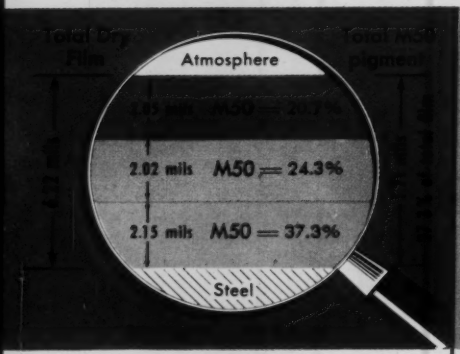
Are you responsible for steel structure maintenance?

If so, you are invited to examine exposure tests of *M50* pigment paints at National Lead's Sayville, L. I. test station. National Lead will also:—(1) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (2) provide technical aid in test applications; (3) help you develop suitable specifications for paints containing *M50* pigment.

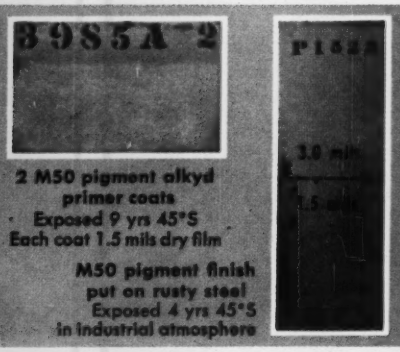
For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

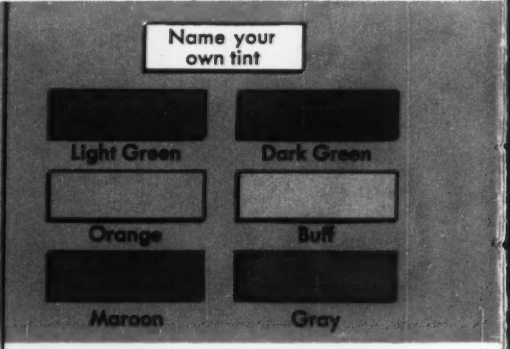
Why M50 Defense in Depth paints give you metal protection beyond all former concepts



In every coat . . . rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.


2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film
M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S
in industrial atmosphere

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.



In every coat . . . your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors . . . not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name_____ Title_____

Firm or Dept_____

Address_____

City_____ State_____

FWD Tractor Has Four-Wheel Steering

A new four-wheel drive, four-wheel-steer tractor, called the Napco "Crab," is said to produce about 45% more drawbar pull than a conventional rubber-tired tractor and provide great verstability in movement.

The tractor's equipment includes a torque converter transmission that provides four speeds forward and reverse.

In steering, a three-position selector allows the operator to choose front-wheel steer, front-and-rear-wheel steer, or oblique steer—with both front and rear wheels turning in the same direction. NAPCO INDUSTRIES, INC., MINNEAPOLIS 11, MINN.

Rubber Expansion Joints May Save Bumps

A rubber expansion joint has been designed to eliminate road shock on highways and make possible smoother aircraft landings.

Anchored between road sections for a water-tight seal, the joint is normally about 13 in. wide, extending the width of the highway or runway slab, fully filling the joint connection to its required depth. The joint itself consists of a series of metal plates, bonded to synthetic rubber to carry the vertical

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LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

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2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops—a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
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- Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
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If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

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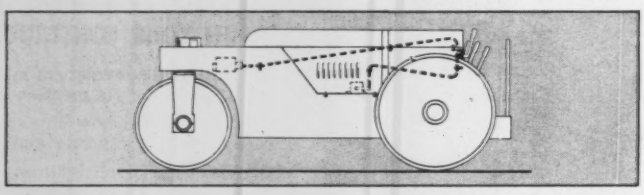
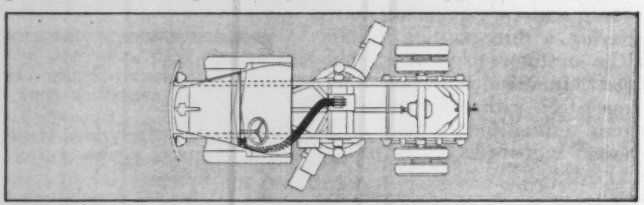
give trouble-free, lifetime service for remote control of construction and quarrying equipment

Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

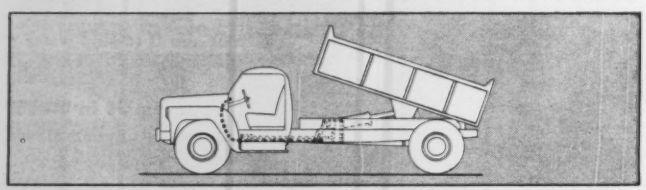
We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.



• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156" long, is capable of a 2" stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

***Look for PUSH-PULLS** on the heavy equipment you buy. It will be easier to operate and less costly to maintain. For complete information we'll be glad to send you this DATA FILE . . .*

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AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

Push-Pull DATA FILE

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2216-F South Garfield Ave., Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

loads imposed on the joint by traffic. The rubber is compounded to absorb movement in cold and warm weather.

C. O. DeLong, president of the Rubber company, said that the joint will permit as much as three inches of contraction and expansion in the highway or runway, while at the same time keeping the rubber flush with the surface. The system originally was developed for the experimental Jones & Laughlin Steel Corp.'s prestressed concrete highway, but now is being designed for use on bridges and bridge approaches. GOODRICH INDUSTRIAL PRODUCTS CO., AKRON, OHIO.

. . . New Products Briefs

• **Light beam**—A 14 in. lightweight structural beam with a 4 in. flange and weighing 17.2 lb per ft is now being produced. Its flange is reported wide enough for bolts or rivets and will provide ample bearing for precast slab construction. JONES & LAUGHLIN STEEL CORP., 3 GATEWAY CENTER, PITTSBURGH 30, PA.

• **Roof decking**—A galvanized steel roof deck or siding, called SteelDek, has been developed for nailing to the manufacturer's light steel structural sections. Sheets are available in 22, 24 and 26 ga. PENN METAL CO., INC., BOSTON, MASS.

• **Soil tester**—Laboratory re-enactments of three dimensional stresses to the point of failure on a given soil are claimed to be possible with a Triaxial Test Apparatus. SOILTEST, INC., 4711 W. NORTH AVE., CHICAGO 39, ILL.

• **Forms coil items**—A complete line of Sure-Grip coil ties, coil hangers, and miscellaneous coil items for use in concrete form work now are available. The manufacturer says that forming costs are reduced when coil ties are used, because each tie has a greater capacity. DAYTON SURE-GRIP AND SHORE CO., KERCHER ST., MIAMISBURG, OHIO.

• **Roof coating**—All-weather, fire-retardent roof coating that the manufacturer claims can be applied to a wet or dry roof in extreme heat or cold has been developed. "Snowbird" can be applied with a brush or spray without heating or thinning. MAINTENANCE ENGINEERING CO., 16 W. JOHNSON ST., PHILADELPHIA 44, PA.

• **Building conveyor**—A building conveyor is interchangeable from belt to chain-and-flight. A specially designed trough permits simple conversion, so that one conveyor now can handle all building material. It is available in 24, 32, or 40 ft lengths. Maximum angle of elevation is 45 deg. MORGEN MANUFACTURING CO., YANKTON, S. D.

Another new Schramm product... Pneumadiesel a low-cost diesel 125 cfm portable compressor

A new opportunity for you to reduce operating costs . . . diesel economy and efficiency at the price of gasoline-driven compressors! That's what Schramm's 125 cfm PNEUMADIESEL Portable offers you. This unit features the accepted advantages of the proven Schramm enbloc engine-compressor design adapted for economical diesel operation. Check these outstanding features . . .

Diesel power at the price of gas-powered units.

More compact—lower, shorter, lighter than competitive gasoline or diesel units. Much lighter than average diesel rig—easier to handle.

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Longer wear—enbloc power unit with heavy duty air cleaners on engine and compressor. Proven piston design outlasts any other method of producing power or compressing air.

Easier maintenance—90% interchangeability of parts between engine and compressor. Average mechanic can service without special training.

Plus features—12 volt starting, one fuel filling per day, all PNEUMADIESEL advantages with customary Schramm features.

GET FREE INFORMATION. Now is the time to cut your costs with PNEUMADIESEL's extra power and efficiency. See PNEUMADIESEL at your nearest Schramm Dealer—or write us for full details.

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When you need maximum precision bearings, buy them. They'll save you money. Rollway has them in all types and sizes.

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Maximum-Type Design and Construction Principles

The Tru-Rol segmented steel retainer is the strongest, most durable available in commercial-grade bearings. Its separator segments are formed to the curvature of the roller for true axial alignment. In combination with rollers crowned to provide equal load distribution, it withstands heavy shock and reversing loads over long periods.

For all the precision and performance you need and can use in non-critical applications, ask a nearby Rollway Service Engineer to brief you on Rollway Tru-Rol characteristics and versatility.

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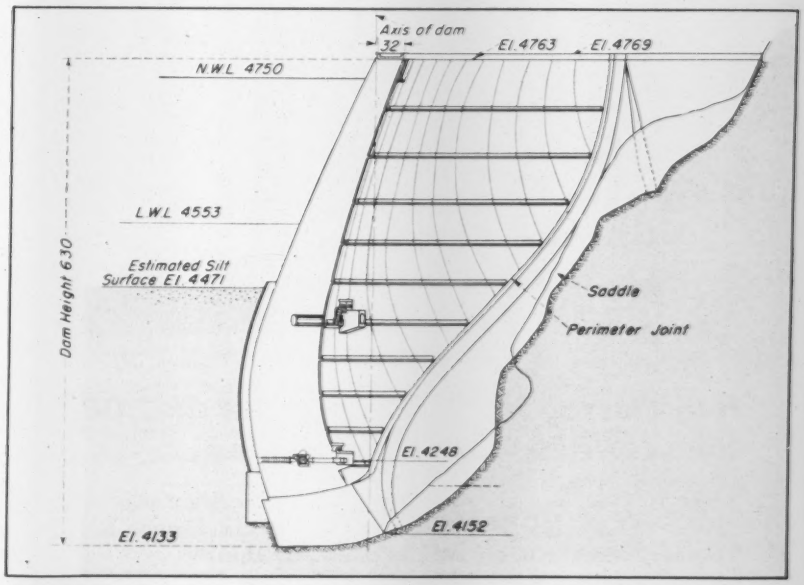
Kurobe Dam to Be 630 Ft. Domed Arch

A 630-ft-high domed arch concrete dam, with control overflow spillway, is under construction by the Kansai Power Co., Osaka, Japan. Known as Kurobe Dam No. 4, the structure will be the fourth highest arch dam in the world, yielding only to Italy's 840 ft Vajont Dam. Switzerland's 745 ft Mauvoisin Dam and 700 ft Glen Canyon Dam in the U.S. (classifying 726 ft high Hoover Dam as an arched gravity structure). All of these high arches are still under construction, with Mauvoisin scheduled for earliest completion. Actually the highest completed arch is France's Tignes Dam at 590 ft.

Kurobe will be 1,240 ft long at crest and will contain 2.1 million cu yd of concrete. It is founded on coarse grained biotite granite. Its central overflow spillway is designed to pass a flood flow of 35,000 cfs. Design of the dam was by Electroconsult Co., Milan, Italy, under the guidance of Carlo Semenza.

Water impounded behind Kurobe is to be conveyed through a six-mile pressure 16 ft dia pressure tunnel to an underground powerhouse equipped with three 86,000 kw generators. The dam and tunnel will combine to develop an effective head of 1,840 ft, to be utilized by six-nozzle Pelton turbines.



MAXIMUM SECTION through 630 ft thin arch under way on Kurobe River in Japan.

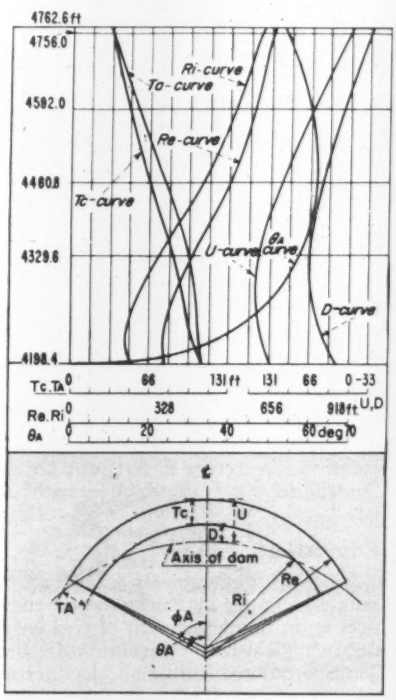
Aside from problems of accessibility, the Kurobe River is ideal for hydro development. Though only 53 miles long, it falls to the Sea of Japan on an average 2.5% gradient. And its 304 sq mi drainage area is blessed with an average rainfall of 150 in. per year.

Building a power stairway on the river from the bottom up, the Japanese have already installed 242,000 kw in four power plants. Now Kurobe No. 4 Project, served by a drainage area of only 80 sq mi, will add 258,000 kw to the system. Its turbines will utilize 1,900 cfs of water at peak load.

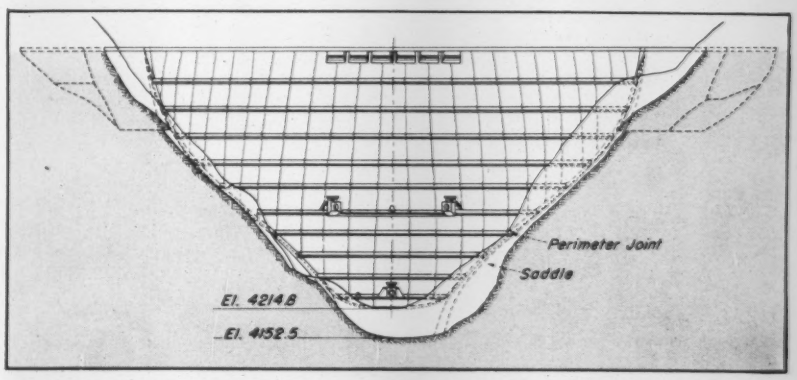
The Kurobe No. 4 damsite lies in an area of majestic snow-covered mountains and steep-sided valleys. Though quite pleasing to the eye, the rugged terrain was also the dambuilders' most difficult problem. Work on a 16 mile access road from a railhead to the dam commenced in July, 1956. Requiring 3.4 miles of 15 ft dia tunneling, the road is just now nearing completion.

It is hoped to have the construction plant at the site completed this year and first structural concrete placed in 1959. Initial power is scheduled for 1960.

The Japanese, aided by Italian consultants, American equipment, are confident the schedule can be met.

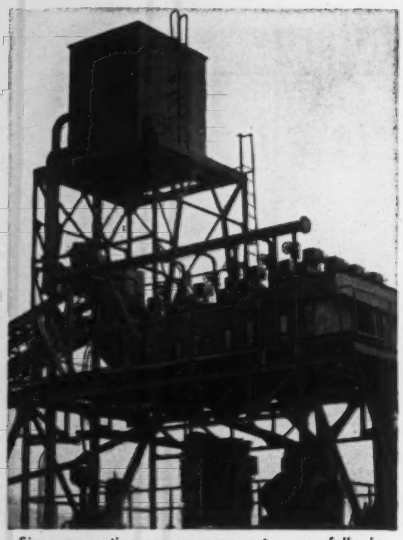


KEY DIMENSIONS are shown on graph.



DOWNSTREAM ELEVATION. Kurobe Dam will be 1,240 ft long at crest level.

specification sand production in the Japan Alps



Sizer operation was proven out successfully in this pilot plant.

four Dorrco Jet Sizers process 690,000 tons for new dam construction...

The Kansai Electric Power Company has recently started construction of the new Kurobe No. 4 Dam on the Kurobe River, Toyama Prefecture in the heart of the Japan Alps.

The 192 meter high dam will require for completion a total of 690,000 metric tons of specification sand, all of which will be processed by four 16½ pocket Dorrco Jet Sizers. Feed to the units consists of 200 metric tons per hour of river sand and manufactured sand. Accurately sized products down to 200 mesh are dewatered and blended to a fineness modulus of 2.51.

The overall low operating costs — particularly the more effective hydraulic water utilization inherent in the Dorrco Jet Sizer — render the unit ideal for operations in relatively remote areas such as the Kurobe Dam installation.

For complete information on this most effective tool for concentration and sizing of 8 mesh and finer particles in the metallurgical, chemical and non-metallic fields, write for a copy of Bulletin No. 2342. Dorr-Oliver Incorporated, Stamford, Connecticut.

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Men and Jobs

American Bridge Engineers Promoted in Pittsburgh

Four career men with American Bridge Division of U. S. Steel Corp. have been promoted to top positions in the company's Pittsburgh office.

Arthur S. Marvin has been appointed vice president—engineering; F. K. Goodell is new chief engineer for the division; K. D. Cunningham is district engineer, and O. H. Ormsby is assistant district engineer.

Mr. Marvin is a civil engineering graduate of the University of Colorado, and has been with American Bridge since 1924. Starting as a draftsman in the Gary, Ind., plant, he advanced through such positions as designer in the Chicago engineering department, assistant division engineer at Pittsburgh, division engineer, assistant chief engineer and chief engineer, which position he held at the time of his latest promotion.

Mr. Goodell received his civil engineering degree from the University of Idaho and has been with American Bridge since 1937. Mr. Cunningham is an Ohio University civil engineering graduate and has been with American Bridge since 1939, while Mr. Ormsby, a civil engineering graduate of Michigan College of Mining and Technology, joined American Bridge in 1937.

Careers

Associations

James E. Hanrahan, Jr., treasurer of Siegfried Construction Co., Inc., has been elected president of the Construction Industry Employers Association of Buffalo, N. Y.

George Nugent, of Big Horn Construction Co., Sheridan, has been elected president of the Associated General Contractors of Wyoming. He succeeds **William Carruth** of George M. Carruth and Son Construction Co., Evanston.

Public Works

Martin S. Petty, business manager of the Kentucky State Highway Department, is leaving the department on an "indefinite leave of absence without pay."

Education

Bruce D. Greenshields has been appointed lecturer in transportation engineering in the department of civil engineering, assistant director of the Transportation Institute and lecturer in engineering mechanics at the University of Michigan.

Blaw-Knox paving equipment helps set production record on Illinois Toll Road

Rugged automatic equipment paves 3100 feet of 10-inch reinforced concrete, 25 feet wide, in a day's operation

Anthony Constantino, general superintendent for John C. Peterson Construction Corporation credits the "high efficiency and durability of the Blaw-Knox Machines" his company used on the Illinois Toll Road with an outstanding contribution to the performance of the John C. Peterson Construction Corporation Forces.

Reynold (Scotty) Scott, paving superintendent, states that "The machines took a terrific beating by constant usage, but they have proven themselves to be rugged, durable and efficient. Any downtime would hold up the job with a serious financial loss, but with the Blaw-Knox Machines, we were able to complete our operation well ahead of schedule."

Record-shattering production to rigid specifications like those set for the Illinois toll road is being delivered time and again by Blaw-Knox Concrete Paving Equipment. All over America, contractors are squeezing more value out of their equipment dollar with Blaw-Knox machines. They're rugged, built for automatic, high production rates that mean more profit on every job. Why not see your Blaw-Knox dealer? He has all the details.

BLAW-KNOX PAVING EQUIPMENT USED: 10,000 10" x 10' self-aligning road forms—Precision Subgrader two 34E Dual Drum Concrete Pavers—two Concrete Spreaders (one with vibrator)—Concrete finisher—Base Paver—Road and Shoulder Widener—Automatic Cement and Aggregate Batch Plants—four 6 cu. yd. HiBoy Truck Mixers.

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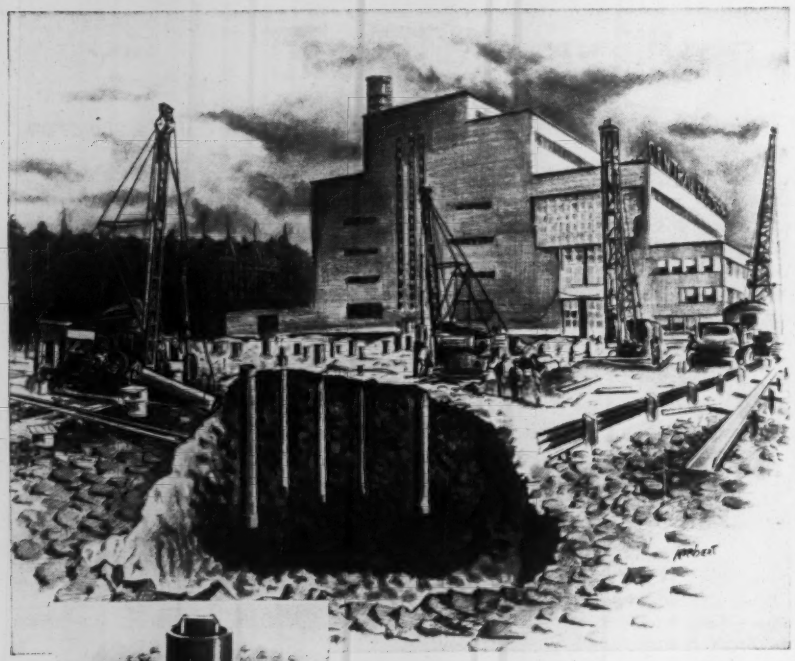
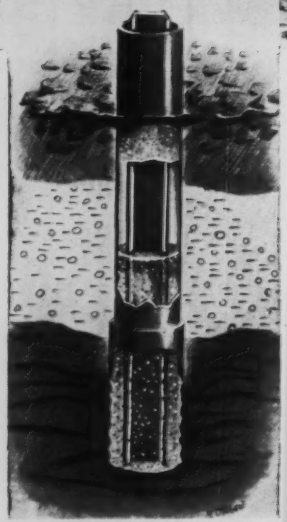
Construction Equipment Division

41 Charleston Avenue, Mattoon, Illinois

CAISSONS DRILLED INTO ROCK
for foundation which must bear heavy loads





Cross section shows caisson shell, concrete filling and steel core. 92 such caissons of 24 and 30-inch diameter were drilled and driven through rip-rap and obstructions, and socketed into rock, for this power plant foundation.

Project: 3rd Unit of Steam Station at Danskammer Point, Roseton, N. Y. for Central Hudson Gas & Electric Corp.

Burns & Roe, Inc., Engineers and Constructors. New York City.

In handling this 3rd foundation unit of the power plant, Spencer, White & Prentis used the same special caisson process as was used for the 2 earlier units. The process offers many advantages. Regardless of ground conditions, water and obstructions, steel caissons can be installed to great depths to bedrock. The core is then embedded in a socket drilled in this sound rock (see sketch at left). Such "locked-in-the-rock" foundations will support superstructure loads up to 1,700 tons each. If necessary, caissons can be placed close to adjoining buildings, thus eliminating cantilevers.

LITERATURE ON REQUEST

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Obituaries

Edward R. Tull, 54, superintendent of the municipal water system at Rockingham, N. C., since January, 1932, and a former president of the North Carolina State Water Works Association, died February 12. He obtained his civil engineering degree from North Carolina State College in 1931. At the 1956 AWWA convention, he was presented the George Fuller Memorial Award.

Frank L. Flood, 60, sanitary engineer and a partner of Metcalf & Eddy, Boston engineering firm, died February 14 in Needham, Mass. He was responsible for, or was consulted in regard to, the design of many outstanding sewerage works. Among these are the Allegheny County Sanitary Authority system in Pittsburgh, the Hyperion sewage treatment Plant in Los Angeles, the Boston metropolitan sewage disposal works, and sewage treatment facilities for Toronto, Ontario. Currently vice president of the Boston Society of Civil Engineers, Mr. Flood graduated from Northeastern University in 1922 and received an honorary doctorate of engineering from Northeastern in 1955.

Richard W. Smith, 27, a civil engineer with the New York State highway department, died February 9. He graduated from the University of Toledo.

Henry W. DeSaussure, 60, a civil engineer, died February 16 at Orange Park, Fla. In past years he had served as division engineer, Florida State Road Department; supervisor, Jacksonville Public Works Administration; assistant engineer, Florida East Coast Railway.

Harold Parker, 68, a Sandusky, Ohio, architect, died February 7. He had designed many structures in the Bay area, including the new Sandusky Building. He was a graduate of Drexel Institute in Philadelphia.

Frank D. Larkin, 69, civil engineer and inspector for the U. S. General Services Administration, died March 9 in Cleveland. A former general manager of Ludowici-Celadon Co., Cleveland, he was with the federal government for 18 years. He was a graduate of the University of Illinois.

Gilbert O. Penrose, 61, a retired civil engineer of Seattle, died there February 4. A native of New York State, he moved to Seattle in 1928. Most of his engineering career was served with the Bureau of Public Roads and the Army's Corps of Engineers.

Drawings up to 24" x 36" may be reduced onto 12" x 18" paper masters by XeroX® Model 1218 copying equipment, above, and multiple copies run off on an offset duplicator. Inset shows volume comparison: Rear stacks have 350 blueprints each, in D, C, B, and A sizes. Foreground has same, reproduced by xerography and offset duplicating.

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Drawings are reduced with fine legibility and without loss of detail to the 12" x 18" confines of the master. Medium-size drawings (12" x 18") may be copied size to size, while several small drawings at a time may be copied in their original size or enlarged individually to 12" x 18". After use, masters may be filed for runoff of additional copies when needed.

XeroX Model 1218 copying equipment permits the use of precut rather than roll paper, thus eliminating hand-shearing operations. The reduced size and thinner stock save filing space as well as folding and unfolding time. The runoff copies are precisely like the original—clean, sharp, and easy to read.

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Big Job For Research

Major building problems listed at BRI meeting

More building-design research and better communication of technical progress between branches of the building industry is needed. This point was stressed at last month's joint meeting of the Building Research Advisory Board and the Board of Governors of the BRI.

More than 50 major business representatives heard 11 speakers attempt to define the broad problems facing the building industry—with reduction of building costs as a major objective.

A list of the important design and construction problems that need development and solution was composed by the group. Included were:

Design

- More study on why buildings leak, with emphasis on thin, lightweight walls.
- Better means of overcoming acoustical difficulties.
- Better, more easily maintained finishes that can be easily applied.
- More materials and assemblies for thin-wall buildings that will stretch and breath like skin.
- More knowledge about the economic life of buildings and how to lengthen their usual life, or to reduce the present unbalance between the life of the structure and the life of the equipment.

(Continued on page 62)

PLANT GROWTHS of moss and liverworts on sides and bottom channels like this 4x4 ft structure, formerly reduced flows in hydroelectric races as much as 14%.

Australians Stop Plant Growth in Flumes

Australian researchers have succeeded in preventing the growth of aquatic plants in hydroelectric station supply races by treating the affected conduits with a sodium silicate solution.

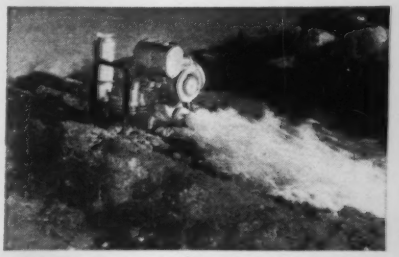
The investigation was undertaken by C. B. Kay of the State Electricity Commission of Victoria when extensive growth of aquatic moss and liverworts was found to reduce water flows in the races by as much as 14%.

Observation showed certain mosses prefer certain depths of water and that the largest growth occurred on the outside curve of a bend in the race where turbulence is greatest. This suggested oxygen was the important factor in the life cycle of the growths.

The simplest and cheapest control developed requires the physical removal of the plants from the surfaces of the race and application of a paint or spray of a viscous formation of sodium silicate.

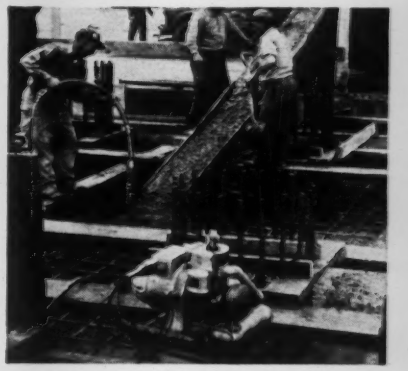
The mixture used is 33% sodium silicate in water with 1% NH_4Cl coagulator. A single treatment gave about 95% control when allowed to dry for 6 hours before returning the race to service. A drying time of 5 days showed the treatment to be 99% effective.

Full Line of Carryable Construction Equipment Now Offered by Homelite



Carryable Diaphragm Pump... Weight: 120 lbs. Capacity: 5000 gph. Size: 3". Centrifugal Pumps: 1½" – 3" also available.

Chain Saws For Every Job . . . Now you can choose from a full line of lightweight, powerful Homelite chain saws. From 3½ to 7 horsepower . . . 19 to 29 pounds. Brush cutting and clearing attachments are available to handle all your cutting jobs.



One-Man Electric Vibrators... High-cycle and 110 volt AC-DC motor-in-head models. Electric flexible-shaft-driven model also available.

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Please send full information on your:
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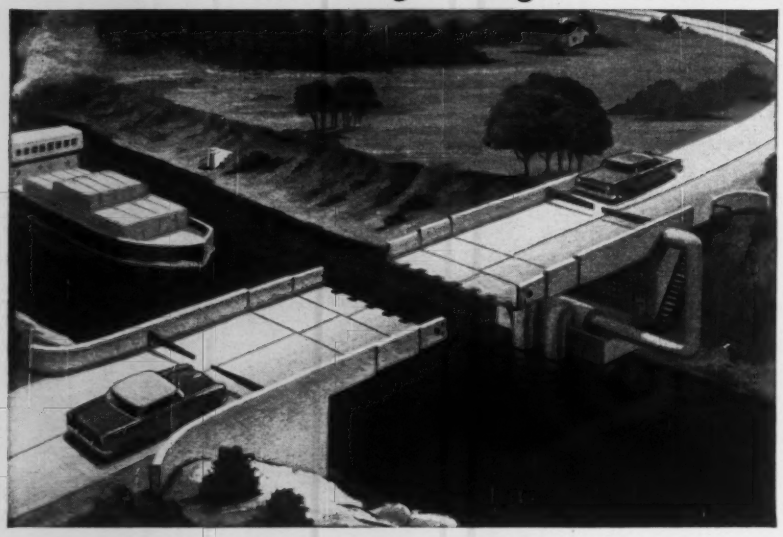
MARS outstanding design **SERIES**



automated bridge

The bridge of tomorrow will be self-activating, equipped with electric-eye controls and an anti-freeze system. No overhead structures will obstruct the view, or interfere with radio reception, according to Robert J. Companik of Chicago.

In his design, the bridge is operated by pressure pumps that draw water from the canal into the hollow structure and hold it shut by the weight of the water. To allow boats to pass, pressure is released, counterweights pull the sections together, and the bridge opens. An electric eye down the canal activates the opening and the bridge does not close until an eye on the other side is passed. Heating units keep both eyes free from snow and ice, and a brine system keeps the bridge in operation in freezing weather.

Many ingenious solutions to traffic and other problems are on the boards today. To make their ingenuity clear, and to translate them from idea into reality, requires the best of drafting tools.

In pencils, of course, that means Mars, long the standard of professionals. Some outstanding new products have recently been added to the famous line of Mars-Technico push-button holders and leads, Lumograph pencils, and Tradition-Aquarell painting pencils. These include the Mars Pocket-Technico for field use; the efficient Mars lead sharpener and "Draftsman" pencil sharpener with the adjustable point-length feature; Mars Lumochrom, the color-drafting pencils and leads that make color-coding possible; the new Mars Non-Print pencils and leads that "drop out" your notes and sketches when drawings are reproduced.

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H. The 1001 Mars-Technico push-button lead holder. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H. Mars-Lumochrom color-drafting pencil, 24 colors.

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at all good engineering and drawing material suppliers

- Investigation of the merits of different methods of insulating and vapor sealing, and the integration of insulation into the design of thin-shell structures.

Construction

- Labor handling problems created by new building components because these units do not fit the traditional division of work by trades.
- More about expansion and contraction joints for concrete slab and quarry-tile roofs.
- More study of temperature and humidity differentials on various parts of a building, both during and after construction.

New Products

- Educational programs for labor that will stimulate use of new products and labor-saving devices.
- Greater introduction of automation into the production of building products.
- Concrete products, lighter in weight, and new methods of strengthening concrete products.
- Stepped up research on the use of precast and prestressed concrete, especially in the field of off-site fabrication and delivery of components.

Urban Planning

- Government recognition of the necessity for efficient renewal and redevelopment of existing urban areas, from the standpoint of industrial and commercial uses, as well as housing.
- Closer coordination between highway planners and planners of urban land areas to avoid locating highways where they would interfere with existing urban areas and deter future development potentials.
- Reduction of the variations in codes, specifications, standards and requirements presented by various local jurisdictions within a metropolitan area.

North Carolina Offers Sanitary Doctorate

The University of North Carolina has announced the inauguration of a course of study in the Department of Sanitary Engineering of the School of Public Health leading to the doctor of philosophy degree.

Candidates for the doctorate must have completed a masters degree program in sanitary engineering, sanitary science, or sanitary chemistry and biology. The major fields of study include water supply and treatment, waste treatment and disposal, environmental sanitation, and atmospheric pollution.

THIS SANDWICH WALL OF ALCOA ALUMINUM HALVES COST OF BRICK CONSTRUCTION, TRIPLES INSULATING EFFICIENCY

The Standard Register Company, Fayetteville, Arkansas, got the lowest cost insulated metal wall system known when it specified sandwich wall of Alcoa® Aluminum for its new 93,000 sq-ft building. Sandwich wall gives three times the insulating value of eight inches of brick, yet costs only about half as much.

Standard Register also knows aluminum's maintenance-free surface defies moisture, salt air, harsh industrial fumes . . . never needs painting or expensive repairs. This building will stay good-looking longer, with less care. Aluminum's lighter weight speeds erection, too; foundation and framing requirements are reduced, and less on-site labor and equipment needed.

GET MORE INFORMATION on sandwich walls of Alcoa Aluminum, and low-cost Alcoa building sheet in corrugated, ribbed and V-beam configurations. Applied by Alcoa Approved Applicators. Get the name of your nearest Applicator from your Alcoa sales office, or write Aluminum Company of America, 860-D Alcoa Building, Pittsburgh 19, Pa.

Building: The Standard Register Company, Fayetteville, Arkansas

Engineers and Builders: The Austin Company, Chicago, Illinois

Alcoa Approved Applicator: Lydick Roofing Company, Fort Worth, Texas

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here's the West's Answer to your Concrete Questions!

* **What parting compound delivers smooth concrete without leaving stains or residue that interfere with painting?**
"Thompson's Water Seal eliminated the problem of stains in our tilt-up concrete walls. Now panels are easily removed from the surface slab and painting proceeds speedily."
ASSOCIATED CONSTRUCTION AND ENGINEERING COMPANY OF CALIFORNIA, San Francisco, Calif.

* **Is there one curing, separating and form-sealing method that easily produces hard, dust-free surfaces?**
"Of all the chemicals we tested in our tilt-up work, Thompson's Water Seal proved the cheapest insurance against costly grief and painting troubles."
BAYCITIES CONSTRUCTION CO., Oakland, Calif.

* **Is it possible to prevent all moisture damage in concrete under pressure or capillary action, regardless of weather?**
"As waterproofing specialists in heavy construction work, we use Thompson's Water Seal on all concrete moisture problems with constant success and at a great saving."
STANLEY H. KOLLER CONSTRUCTION, Crockett, Calif.

THOMPSON'S (deep penetration) WATER SEAL is distributed nationwide by building supply companies and paint and hardware dealers.

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Legal

Liability of Surety

Court held surety liable for material purchased before bond was issued

A federal court in Mississippi has held that the liability of a subcontractor's surety extends to the payment of material purchased before the payment bond was issued if no default had occurred before that date.

By the terms of the subcontract in question, the sub had agreed to perform all the work required, to furnish all necessary materials and to pay for all labor required in the performance of the contract.

Before the contract was signed, the general contractor had acquired some material that was later turned over to the subcontractor. This occurred before the payment bond was delivered.

Later, the subcontractor became insolvent. The surety commenced the action to determine if it was liable for the materials furnished before the bond was delivered.

The lower court held that there was no liability. This judgment was reversed by the appellate court, that court holding that liability under the law of Mississippi existed for all materials furnished in connection with the performance of the subcontract. Reason for the action was that the subcontractor had become insolvent and was unable to pay some of the materialmen.

The appellate court referred to many authorities holding that there would be no liability for material furnished before the execution of the bond but said the rule of law did not apply to the instant case since there had been no prior default in payments.

The court stated: "The district court relies on the well established rule that in the absence of special provisions a surety contract will be interpreted to be only prospective in effect. But the very quotation used by the court shows the inapplicability of that doctrine as generally stated to the present situation: 'A contract of suretyship is not retrospective in its operation and no liability attaches to the surety for defaults occurring before it is entered into, unless an intent to be so liable is indicated.' 72 C.J.S., Principal and Surety, Section 108.

" 'Similarly from 50 Am. Jur., Suretyship. Section 34: Contract of suretyship affecting ordinary business transactions take effect from the date of their execu-

DELAWARE HIGHWAY DEPARTMENT SELECTS PRESTRESSED CONCRETE FOR NEW BRIDGE...

(*Above*) Placing the last of the first five spans of the new Fenwick Island Bridge. There will be eleven spans in all with a total length of 440′. Box beams are 39′ 11″ x 3′ wide and weigh about 10 tons. Each span requires 13 beams.

Owner: Delaware State Highway Department

Designed by: Bridge Division, Delaware State Highway Department

Contractor: George & Lynch, Inc., Wilmington, Del.

Prestressed Beams Manufactured by: Eastern Prestressed Concrete Corporation, Line Lexington, Pa.

(*At right*) Moving beam from casting bed in background to stockpile, early in the morning at manufacturer's plant. Beam was cast the previous day.

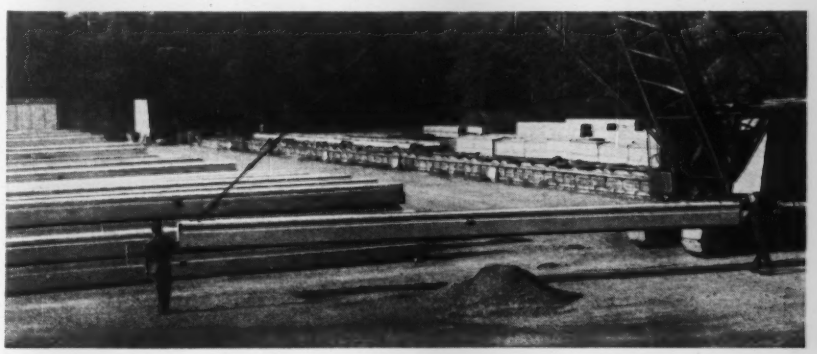
This new bridge links Fenwick Island with the mainland in the famous Delaware-Maryland Seacoast area. Its spans are prestressed concrete, chosen by the Delaware Highway Department for quicker, more convenient construction, at lower costs.

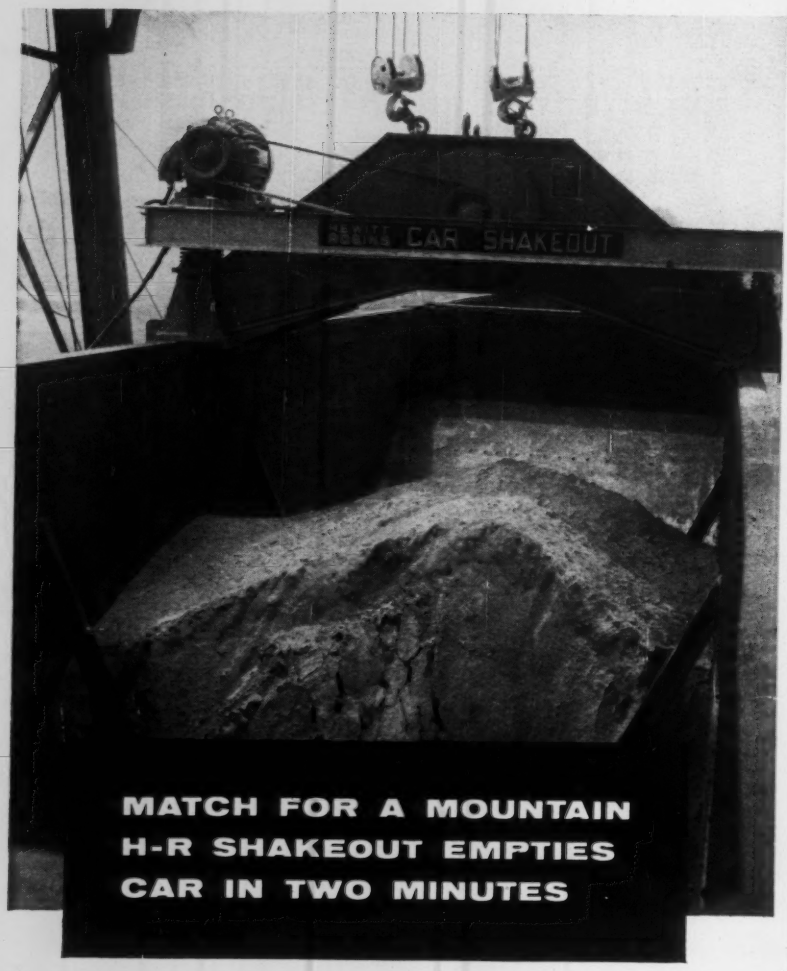
Precast to exacting specifications at the manufacturer's plant, the box beams were trucked to the job site as needed. Beams were quickly lifted from the truck and swung into place by crane—making it easy to place a span of thirteen beams a day.

In manufacturing these beams, Eastern Prestressed Concrete Corporation used Lehigh Early Strength Cement to gain maximum production efficiency. With the concrete reaching 4000 PSI in 18 hours, it was possible to make 8 beams every other day using only one 345′ casting bed.

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

LEHIGH PORTLAND CEMENT COMPANY Allentown, Pa.





Just one Hewitt-Robins Car Shakeout mounted on an "A" frame, and emptying 90 cars per day, unloaded an actual mountain, 250,000 cubic yards of fill, at the site of a new railroad freight station in New Rochelle, N. Y. This Hewitt-Robins Car Shakeout, installed by the Gilbane Building Company, delivers 1,460 vibrating strokes per minute to empty a car in two minutes—a job which would require three men working an hour to do manually.

1,500 of these rugged Shakeouts are proved time, labor and money savers with coal, petroleum coke, limestone, ore, dirt fill, and many other materials. Even partially frozen cars have been safely unloaded without car damage at a fraction of the previous time required. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.

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INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

tion, and applying the rule that a surety cannot be held beyond the terms or legal effect of his engagement, the surety's liability will generally be restricted to *defaults* of the principal occurring during the period of the suretyship undertaking.'

"This is merely a natural consequence of the fact that for practical purposes these suretyship contracts are much like contracts of insurance, whereby the insurer will assume the risk only of future occurrences but not of past and established ones. Here, however, there was no default which anteceded the execution of the bond, nor did the previous acquisition of materials and contracts for sub-projects make such a default more probable."

The appellate court indicated that, as required by Mississippi code, the subcontract required the performance of certain items of work and the furnishing of all labor and materials necessary to complete the work and that the bond was to secure performance of all the terms of the contract. By Mississippi law, such construction contracts are indivisible (Clark v. Till. 177 Miss. 891, 172 So. 133). Under such circumstances, the appellate court held that the subcontractor's surety was liable for materials furnished prior to the execution of the bond, where there had been no default on the part of the subcontractor at the time the surety bond was executed.

(1) Reed v. Maryland Surety Co., 244 F. 2d 857, U. S. Court of Appeals, Fifth District, April 22, 1957.

Damages for Trespass By Construction Firm

When a contractor dumps dirt and other material on another's land without permission, he is guilty of trespass and can be sued for damages.

An Ohio court has held that the amount of damages recoverable is the cost of having the property restored to the condition in which it was before the wrongful acts of the contractor were committed.[1]

(1) Strauss v. McCurdy, 143 N.E. 2d 620, Court of Appeals of Ohio, Apr. 27, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

Stop window breakage with flat panes of shatterproof Hetron and fibrous glass. They come precut, install like ordinary glass.

Meet code requirements with a material that's recognized as safe in locations where fire might be a hazard.

Save time on installation with big Hetron-based panels that require no special framing or sash, go up fast because they're so light in weight.

Wash out glare and shadows with light-transmitting areas that relieve eyestrain and fatigue, make your plant more productive.

Remember, not all polyester panels are fire-retardant. Hetron-based panels carry U/L label or Factory Mutual seal of approval.

Vent corrosive fumes, too—with fire-safe ductwork of Hetron-and-glass that outlasts metal, requires little or no maintenance.

Bring the daylight in–*safely* *with Hetron®-based panels*

Spread big zones of diffused daylight right where you need them: into storage and work areas, around machines, throughout a whole building.

You get free light transmission—but no glare—with these panels of glass-reinforced Hetron polyester. At the same time, their very low heat transmission helps keep heat *outside* in summer, *inside* on wintry days.

No breakage or fire hazard

You get extra safety, too. These polyester panels let you bring the daylight in *without creating breakage or maintenance problems.*

Besides being shatterproof, panels made with Hetron are *permanently flame-retardant;* can't ever contribute to a blaze because the Hetron polyester in them is self-extinguishing. They meet stiffest safety requirements in areas where codes specify use of a "fire-retardant" or "slow-burning" material.

To take advantage of modern daylighting that fully meets industry requirements, be sure to ask for *Hetron-based* panels—or specify *fire-retardant grade* when requesting bids from fabricators.

For the names of leading fabricators who can supply you with these safer panels, write us now.

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PLASTICS DIVISION

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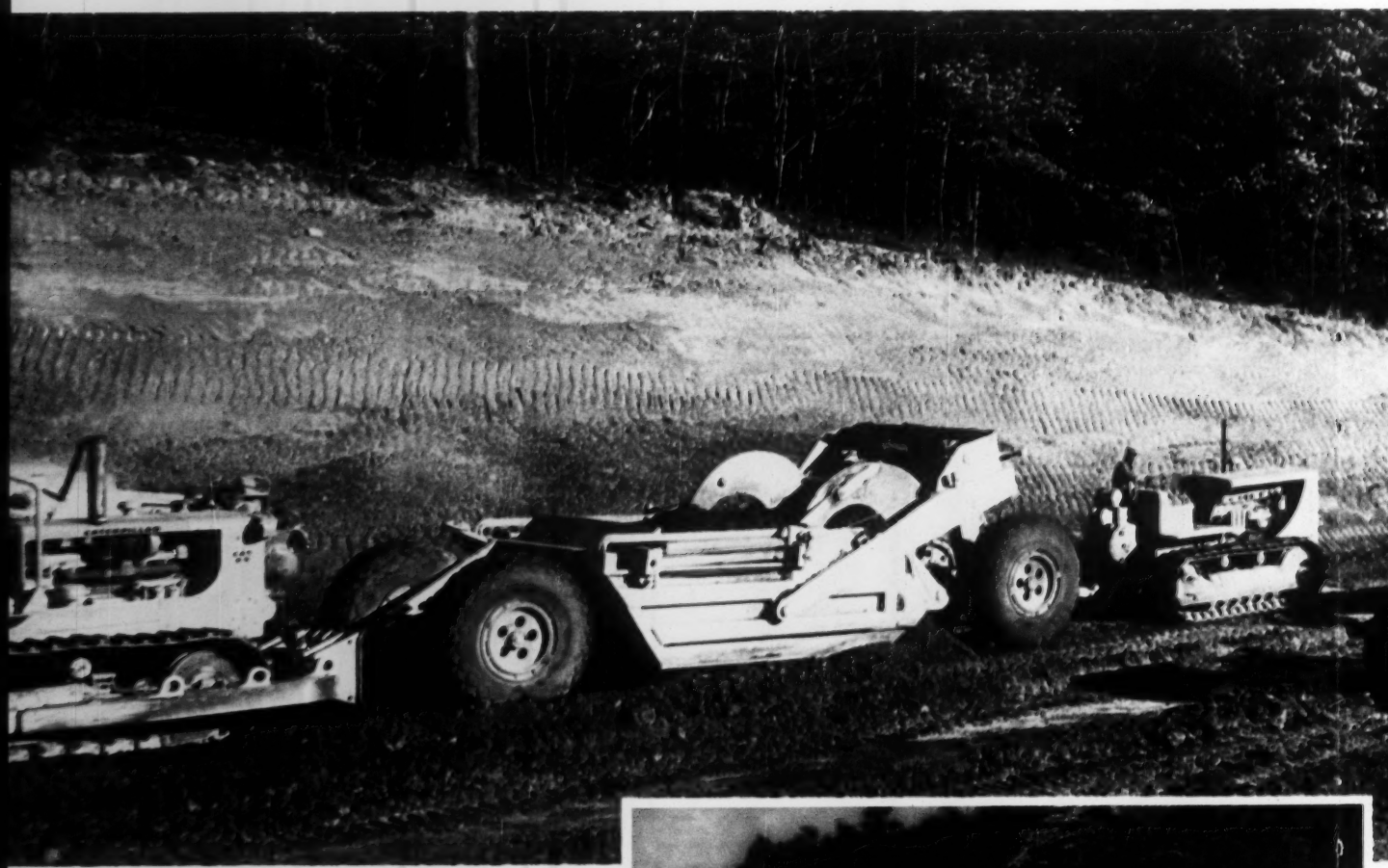
5004 Walck Road, North Tonawanda, N. Y.

Penna. 66 gets a major face lifting ...Gulf helps Myers do it



Marion Hoke, Superintendent of Ralph Myers Contracting Corporation, and H. H. Hossler of Gulf Oil Corporation on the job. Gulf products and service will help Myers meet the August 1958 deadline on this 4-mile project in Pennsylvania.

The rolling hills of western Pennsylvania are beginning to take a new appearance under the Federal Highway Act. Especially around Mamont, Pa., where Ralph Myers Contracting Corporation of Pittsburgh is engaged on Federal Project F322(5). This project is 4 miles long, and involves the relocation of Route 66—with much work on connecting routes 80 and 366, including the building of an overhead bridge over Route 80. More than 514,000 cubic yards of Class I excavation is involved in the project.

Ralph Myers Contracting Corporation is a Gulf customer of long standing. Like hundreds of cost-conscious contractors everywhere, this firm depends on Gulf products and service to keep equipment rolling. They know that Gulf quality lubricants help prevent mechanical delays and—with Gulf fuels—assure top performance from engines. 1500 strategically located Gulf warehouses assure prompt deliveries. And of course Gulf engineering counsel is always available, on the job, at no cost to you.

GULF

Next job, why not have Gulf serve *you?* Meanwhile, get these two helpful booklets: "Gulf and Your Business" and the new "Contractors' Guide." Just call your nearest Gulf office, or use the coupon.

GULF OIL CORPORATION
Dept. DM, Gulf Building, Pittsburgh 30, Pa.

☐ Please send me the free booklet "Gulf and Your Business"

☐ Please send me, free, the new "Contractors' Guide"

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Company_____

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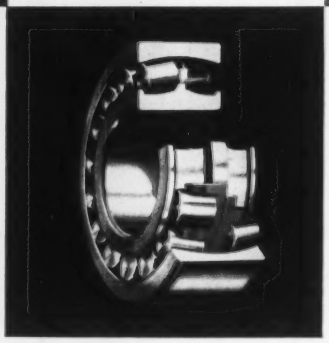
SP 9280

TORRINGTON SPHERICAL ROLLER BEARINGS

The Manitowoc 4500 Power Shovel is equipped with Torrington Spherical Roller Bearings in 7 critical heavy-duty, high-speed applications where they eliminate stress concentrations and provide long service life.

How to get a big lift



Torrington Spherical Roller Bearings in critical positions on the Manitowoc shovel help it handle tons of earth and rock with ease and speed!

Accurate roller-to-race conformity and positive roller guidance of Torrington Spherical Roller Bearings insure long, trouble-free service. They are used on the swingshaft, PTO sprocket support, front drum main shaft, front and rear drums, countershaft, PTO pilot and vertical travelshaft. These self-aligning bearings insure smooth anti-friction operation and efficient transmission of power despite heavy radial and thrust loads, housing misalignment and shaft deflection.

Wherever heavy-duty construction equipment is at work, Torrington Bearings are contributing to efficiency and long service life. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

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Books

Highway Surveying Digest

HIGHWAY SURVEYING—190 pp. Lefax Philadelphia 7, Pa., $3.25.

The contents of the book are looseleaf in a handy pocket size. Text matter includes such subjects as preparation of road plans, highway location and deings, horizontal and vertical curves, trig. formulae, etc. Tables include functions of curves, spiral curves, angular deflections, trigonometric functions, earthwork tables, etc.

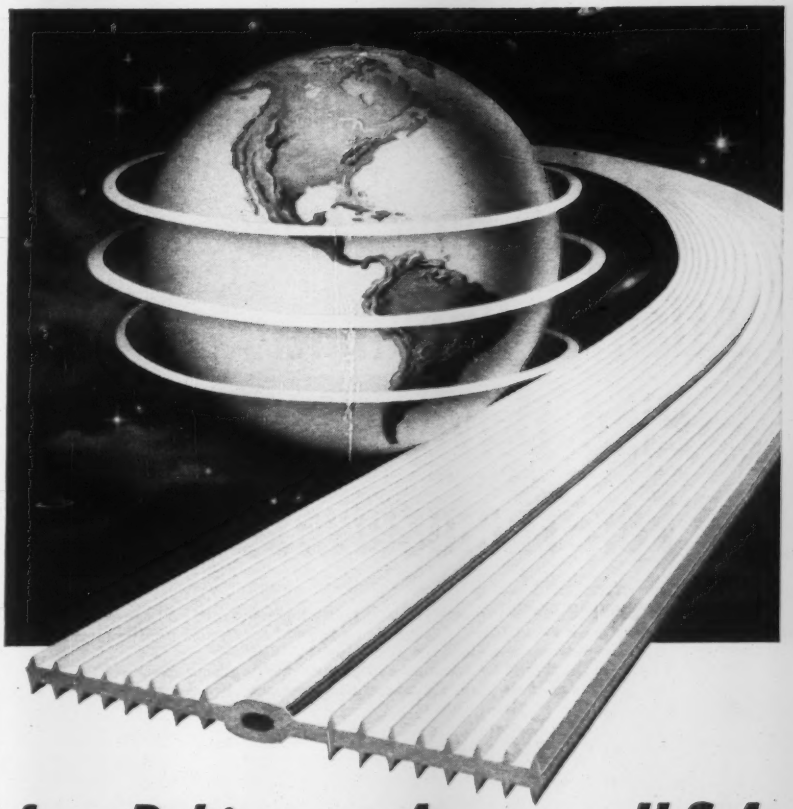
The book is divided into five sections by tabbed indexes. The first, on methods, includes some of the latest reprints from technical publication on surveying techniques. The second section, on curves, includes text and tables covering horizontal curves and spirals, plus railway data. The third section, on construction, gives the latest pertinent information on construction techniques and uses of surveying instruments at the highway site. A fourth section, on design, discusses highway location, vertical curves, road plans and the like. Final section is a compilation of miscellaneous useful table.

The handbook represents an excellent collection of practical information for the engineer or contractor in the field of highway construction.

Reports and Pamphlets

• **Wood tanks**—A 28 page up-to-date reference book is being published by the National Wood Tank Institute. The book, "Wood Tank Reference and Data Handbook," includes such subjects as: the uses of wood tanks; capacities; physical and chemical properties of wood and their relation to expected service of wood tanks. The use of wood to cover the most severe conditions found in chemical processing by the use of selected polymer linings, is discussed. This indexed handbook may be obtained free, from the National Wood Tank Institute, 332 S. Michigan Ave., Chicago 4, Ill.

• **Radioactive waste disposal**—A summary of procedures and government directives concerning the disposal of radioactive waste materials has been published as a report by the Army Chemical Corps, and released for industry. Included in the 15 page report are reviews of waste disposal studies and procedures of the Atomic Energy Commission, and a section deals with handling wastes expected from Army reactors. The volume, PB 131085, Special Report: A Survey of Radio-



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"DURAJOINT" Waterstops have been chosen by Engineers and Architects around the world as the ideal waterstop for the elimination of water leaks through the expansion or construction joints of concrete structures. Test after test, conducted by various independent testing laboratories and on the job, conclusively prove that it takes the right combination of PVC material and multiple-ridge cross-section design, found only in DURAJOINT, to stop water under all joint conditions that are likely to exist. DURAJOINT Waterstops are strong, flexible, easy to install and may be spliced on the job without special equipment or skilled labor.

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Acclaimed by thousands in the construction industry as the most authentic book of its kind, on preliminary Cost Estimating. The new 1958 edition includes over 500 additional cost items plus a new supplementary section on Foreign Base Construction Cost.
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active Waste Disposal, F. A. Hedman, U. S. Army Chemical Center, Jan. 1956, may be ordered for 50 cents. Office of Technical Services, Dept. of Commerce, Washington 25, D. C.

• **Study of soil freezing**—The possible application of new knowledge concerning melting and freezing of metals and water in soil is set forth in a recent report. The theory of the nucleation of freezing and major phenomena of soil freezing are outlined. The report, PB 131243, entitled "Study of Ice Formation in Soils" (44 pp), by K. A. Jackson B. Chalmers and G. McKay, Harvard University, may be ordered from Office of Technical Services, Dept. of Commerce, Washington 25, D. C., for $1.25.

• **Topographic mapping**—The status of topographical mapping in the U. S. and its territories in terms of the topographic and planimetric quadrangle maps produced by the Geological Service and other federal agencies is indicated on a new atlas sheet titled "Status of Topographic Mapping." It is available from Map Information Office, U. S. Geological Survey, Washington 25, D. C.

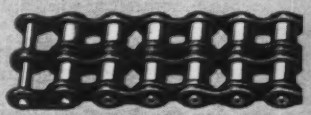
• **Aerial photography**—An atlas sheet showing all areas known to have been photographed by federal, state or commercial agencies is now available. Titled "Status of Aerial Photography," it has been published by the Map Information Office, U. S. Geological Survey, Washington 25, D. C.

• **Sanitary engineering careers**—A vocational guidance brochure devoted to sanitary engineering will be available about March 15 from the U. S. Public Health Service. Titled "Toward a Healthier World: Your Career in Sanitary Engineering," the book will be in color and about 20 pages long. It is written in simple, direct language for interested secondary school students. Copies are available from Public Inquiries, U. S. Public Health Service, Washington 25, D. C.

• **River silt**—"Fresh Water-Salt Water Density Currents, a Major Cause Of Siltation In Estuaries" discusses recent discoveries related to the effects of upland discharge on estuarine hydraulics, and fresh water-salt water density currents as a major cause of siltation. The authors describe a simplified method for determining the most significant hydraulic characteristic of estuaries, and they demonstrate the effects of changing the upland discharge into estuaries considering their characteristics. Examples are given and remedial measures described. Copies may be obtained for 75 cents from U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Where you find these...

Rex Chabelco Steel Chains...the most widely used chains in construction machinery. Built-in clearances and rugged construction make them ideal for this service.



Rex Roller Chains...precision-made quality chains for the higher speed power transmission applications. Unique Glide-Fit design assures easy field coupling and uncoupling.

Shafer Self-Aligning Roller Bearings... combine the low rolling friction of a ball with the high load-carrying capacity of a roller. High integral self-alignment.

you're sure of PLUS value

One of the best ways to check the quality of construction machinery is to look at the component equipment in the machine...the chains and bearings, for example!

Where you see CHAIN Belt chains and bearings, you can be sure of getting the *plus* values that mean long, economical service...freedom from premature breakdowns that cause job hold-ups and lost operating hours. Rex Chabelco Chains, Rex Roller Chains and Shafer Bearings on the equipment you buy are your assurance that the manufacturer has protected his good name with another...CHAIN Belt! Look for it.

And to be sure of keeping that same quality performance through the life of the machine, buy your replacement parts from the original equipment manufacturer through his distributor. CHAIN Belt Co., 4633 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT

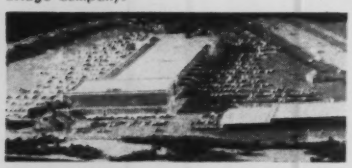
Easy, Proven Way to Permanently Bond New to Old Concrete – for less than 4¢ per square foot!

WELD-CRETE

Weld-Crete is the patented, job-proved liquid bonding agent which enables you to *permanently* bond new concrete, or cement plaster, *directly* to any other structurally sound surface no matter how smooth! No costly, time-consuming surface preparation. Just apply, let dry, and pour or trowel new concrete. Ideal for new construction, remodeling, repairs . . . *ramps, floors, precast shapes, driveways, highways, walls, machine mounts and pads.* Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways one day and run heavy truck traffic over them the next. Get fact-packed literature from your Building Materials Dealer, see Sweet's File, or write us direct. Address Larsen Products Corporation, Box 57561, Bethesda Maryland.

Typical **WELD-CRETE** Applications

GRANVILLE ST. BRIDGE, VANCOUVER, BRITISH COLUMBIA—One of the largest 8 lane bridges in North America. Here Weld-Crete was applied to bridge surface to bond cement dividing strips. Now, over 4 years later, bonds are as good as new. *General Contractor:* Dominion Bridge Company.



SEVEN CORNERS SHOPPING CENTER, FALLS CHURCH, VIRGINIA—During construction of this 600,000 sq. ft. structure, initially only part of floor was poured and floated to a smooth finish. Areas in which show windows would be added were poured as base slab only. Slab was coated with Weld-Crete. After store fronts were custom-built, delayed toppings of 1" to 1½" thick were poured with assurance of permanent bond to base slab. These toppings were then finished with asphalt tile, wood, or finish flooring of lessee's choice. Designed and constructed by The Kass Realty Co. of the Kass-Berger Organization under direction of J. Franklin Groff. *Concrete Contractor:* Moses-Ekco.

Patient Treatment Units, Kansas Hospital

A group of eight buildings at Topeka, Kan., will be built at a total cost just under $2 million and an average cost of $17.25 per sq ft and $1.47 per cu ft. The Service and Treatment building is three stories. The other seven, one story each, with 11 ft ceiling heights, will be Admissions, Continued Treatment, Maximum Security, Non-Ambulatory, Convalescent, and two cottages.

Kiene & Bradley, Topeka, Kans. are the architects and John E. Brink is State architect.

The contract price analysis shows the following ratios and unit prices:

Bids: Nov. 1957	Total Contract	% of Total	Average sf	Cost per cf
Size			113,700	1,334,325
General contract	$1,188,000	60.6	$10.45	$0.89
Plumbing	141,528	7.2	1.24	0.11
Heating, air conditioning (100%) & ventilation	436,500	22.2	3.84	0.33
Electrical	195,454	10.0	1.72	0.14
Total	$1,961,482	100	$17.25	$1.47

Completion schedule: 600 calendar days from 12-12-57

How close the bidding was is shown by this review of the bids:

General Contract

1C	M. W. Watson, Topeka, Kans.	$1,188,000
2	Martin K. Eby Constr Co., Wichita, Kans.	1,222,429
6*	D. C. Bass & Sons, Enid, Okla.	1,290,000

* A seventh bid was irregular

Plumbing

1C	Chaffee & Son, Topeka, Kans.	$141,528
2	Kendall Plumbing, Inc., Wichita, Kans.	141,881
7	Beck-Baer Co., Topeka, Kans.	171,990

Heating, Ventilating & Air Conditioning

1C	Kendall Plumbing, Inc., Wichita, Kans.	$436,500
2	Beck-Baer, Topeka, Kans.	457,200
6	Natkin Co., Kansas City, Mo.	527,730

Electrical

1C	Shrake Elect. Inc., Topeka, Kans.	$195,454
2	O. K. Johnson Elect., Inc., Topeka, Kans.	205,990
3	Ling Elect., Inc., Dallas, Texas	231,313

Unit prices for adjusting differences in quantities on the general contract include:

Bids: 11-26-57 Items	Unit	Unit Prices 1C Add	1C Deduct	2 Add	2 Deduct
Excavation, earth	cy	$0.65	$0.25	$1.00	$0.25
neat	cy	5.00	2.00	5.00	1.00
rock	cy	18.00	.....	15.00	3.00
neat	cy	60.00	.....	25.00	8.00
Concrete work, general	cy	55.00	30.00	50.00	15.00

Columns, floor and roof slabs are concrete in all eight buildings. The exterior of five buildings is brick facing with concrete block backing and curtain wall. The other three are brick facing, concrete slab, and wood roof framing on wall bearings. Partitions are block. Some walls are plastered, some not; all are painted. All buildings are fully air conditioned.

Close Bidding on California Boulevard

This roadway excavation price of 70¢ a cu yd includes transporting and disposing of all excess material, and salvaging and placing clean earth to the required grade. Work for the City of Long Beach, Calif. covers improvements to Del Amo Boulevard in Long Beach, between Los Angeles County Flood Control Channel and Long Beach Boulevard.

The $1,300 lump sum for clearing and grubbing includes removal of 360 lin ft of 5 in. wooden fence, 23 posts 6x6 in., seven trees of 2 to 6 in. dia, eight of 7 to 9 in., and twelve of 10 to 30 in. dia.

Jess D. Gilkerson is Long Beach city engineer.

The $104,501 award to the Griffith Co., Los Angeles, Calif., is less than 1% under the second of the three bids.

Wages prevailing in the area in December included: Truck drivers, $2.705-2.905; power crane & shovel operators, $3.66; common laborers, $2.575, all including fringe benefits. In January, 1958, fringe benefits for truck drivers was increased 2½¢.

1C	Griffith Co., Los Angeles, Calif.	$104,501
2	Ansco Constr. Co., Long Beach, Calif.	105,062
3	H&H Constr. Co., Long Beach, Calif.	107,631

Bids: 12-12-57 Items	Unit	Quantity	Unit Prices 1C	2
Conc curb	lf	363	$0.80	$1.05
div island type	lf	3,813	0.90	1.20
& gutter, 6"x1.5'	lf	250	1.35	1.41
6"x7.0'	lf	3,728	3.15	3.33
gutter, 6"	sf	1,078	0.40	0.485
8"	sf	6,452	0.70	0.61
& prep of subgr, sidewalk	sf	2,340	0.30	0.30
pave, 3"	sf	11,696	0.25	0.275
5"	sf	144	0.45	0.43
drivew apr	sf	440	0.50	0.485
drainage ditch ip	ea	1	1,000	743.00
Asph conc surf, tp B	t	4,460	5.85	5.40
Plant mix surf	t	93	5.85	7.00
Crusher run rock base	t	9,795	2.45	2.64
dust	t	489	2.75	2.54
Prep subgr for crusher rock base & 3" pl mix surf	sy	24,980	0.11	0.11
Conc sawing, 2" depth	lf	72	0.35	0.50
removal	cy	1,633	3.65	3.66
centerl monu, tp B ip	ea	5	23.00	8.00
MH frames with covers, reset to grade	ea	3	35.00	30.00
Reinf stl dowels, ¾ x24", asph dipped ip	ea	110	0.70	0.88
Traffic isl delineators ip	ea	7	12.00	14.00
Excavation, roadway	cy	9,592	0.70	0.80
Clear & Grub	ls	job	1,300	730.00
VCP connecting sewers, 6" ip	lf	812	2.30	2.00
45° riser structs, 6" ip	ea	11	35.00	30.00
SP line conc encase, conn ip	lf	249	3.50	3.00
chimney, lower & remodel	ea	1	55.00	51.00
MH, std, tp E ip	ea	1	400.00	350.00
ESP, cem, 15", incl conc bkfl for exist SP ip	lf	63.5	8.00	7.00
21" ip	lf	12.5	9.00	9.00
RCP, 1750 D-load, 30" ip	lf	381	14.00	12.50
Asph ctd cor copper stl pipe arch, 14 ga, 25"x16" ip	lf	20	10.00	9.85

ip In place ESP Extra strength pipe

Light-weight Beth-Cu-Loy Pipe is so easy to install

Here you see a 14-ft length of corrugated galvanized Beth-Cu-Loy pipe being moved to location by only two men. Made of 16-ga sheet steel, this section weighs but 214 lb; larger sections in heavier gages can be handled by the simplest kinds of lifting devices.

The advantages of such light weight make possible quick and economical drainage installations. First of all, light-weight pipe is cheaper to ship. Smaller diameters can be nested inside larger ones, and it is entirely possible to load more than a quarter-mile of pipe on one truck!

At the job-site, Beth-Cu-Loy pipe's long lengths reduce the number of field joints. Pipe-laying can keep right up with the trenching. And it's an easy operation, again because of the pipe's light weight. Large crews of men and costly hoisting equipment are not needed for installation.

Pipe made of Beth-Cu-Loy is strong, too, because Beth-Cu-Loy is steel. A uniform coating of Prime Western zinc provides corrosion-resistance that protects the pipe for many years. You can generally figure on a culvert of this type outlasting the original project for which it was designed.

Beth-Cu-Loy sheets for drainage pipe and culverts are made by Bethlehem to AASHO specifications. Any of our fabricators will be glad to give you further information about Beth-Cu-Loy sheets and how they can be used to meet your drainage engineering needs. For the name of a fabricator near you, just get in touch with us.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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BETHLEHEM STEEL

BETHLEHEM STEEL

EUCLID'S unmatched Rear-Dump

Over 400 Euclid Rear-Dumps were put to work on the U. S. side of the St. Lawrence Seaway—with many others on the Canadian side. The 22-ton "Euc" outnumbered all other makes and models of off-highway haulers on this huge earthmoving project.

Rear-Dump "Eucs" have proved their rugged dependability and outstanding performance on the toughest jobs. With engines of 143 to a total of 670 h.p., they have plenty of power to move big loads on steep grades and difficult hauls often encountered in highway work.

On the Iron Ranges almost 4 times as much ore is moved in "Eucs" as in all other make Rear-Dumps! In Minnesota alone more than 1300 Euclids of 15 to 50 ton capacity are hauling ore and overburden.

Dam construction demands equipment that can take the pounding of heavy excavation loaded by big shovels and draglines and keep coming back for more! "Eucs" are unequalled for job availability and for low cost production—that's why they've been the choice of dam builders for many years.

With capacities ranging from 10 to 50 tons, there's a Rear-Dump "Euc" to fit any quarry or open pit mining operation. Simple design, combined with ample power and speed, easy handling and minimum downtime results in more tonnage moved at lowest cost. Quarry body is optional on most models.

experience gives you Bonus Benefits

For 25 years Euclid has specialized in designing and building equipment for heavy, off-highway earthmoving. The dependable low cost performance of these "Eucs" has made them the standard of comparison for contractors, mines and quarries around the world. About 7 of every 10 off-highway Rear-Dumps are Euclids.

Although this unmatched experience may not be apparent when comparing specifications, it assures bonus benefits for Euclid owners—cost-cutting advantages not provided by comparable equipment. The greater use of Euclids results in faster complete field exposure to operating and maintenance characteristics under all conditions. It assures advanced design that pays off in more work-ability and minimum downtime on the job.

With Euclid's larger machine population, it's economically possible for Euclid dealers to provide more complete service facilities and ready availability of all factory engineered replacement parts. It's factors like these that enable owners to keep their "Eucs" operating at peak efficiency with unusually high availability and low production cost.

When you're considering Rear-Dumps, get facts and figures from your Euclid dealer—have him show you why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Your Euclid Dealer offers
the best equipment investment

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

New B. F. Goodrich Hi-Torque Brake
THE FIRST AND ONLY WITH FULL-CIRCLE
B.F.Goodrich
OFF-ROAD BRAKE STOPPING POWER
B.F.Goodrich Hi-Torque brakes

NOW — Continental-Wooldridge selects B. F. Goodrich Hi-Torque Brakes for giant tractor-scraper-dumper combinations

The B. F. Goodrich Hi-Torque Brake is a unique application of successful aircraft braking principles to the heavy duty off-road equipment field.

It's unique because it provides up to two and a half times the stopping power found in conventional two-shoe brakes. One Job Superintendent in Ohio had this to say after actual on-job tests of the brake. "We could operate on terrain operators considered unsafe for our equipment using conventional two-shoe brakes."

Secret of the B. F. Goodrich Hi-Torque Brake's amazing power is the exclusive hydraulic expander tube actuation. Providing equal pressure under each of 12 shoes in the B. F. Goodrich Hi-Torque Brake, this full-circle actuation allows shoes to follow drum eccentricities. Lining pressure is equalized—stops are smoother as well as faster—and there is less chance of fade even during long downhill runs. In addition, torque is always equal in forward or reverse.

If you build or use wheeled off-road vehicles of any description, send for the free folder—The B. F. Goodrich Hi-Torque Brake. It gives actual test results and specifications—describes how easy the brake is to install and service. Write: B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Troy, Ohio.

Continental-Wooldridge self-propelled Dumper and Scraper Models CWD-214, CWD-321, CWD-221, CW-215, CW-220, and high capacity tractor-drawn Scrapers, have capacities up to 30 yards struck and 39 yards heaped. 22" x 7" and 26" x 7" B.F.Goodrich Hi-Torque Brakes provide maximum stopping power.

B.F.Goodrich Hi-Torque brakes

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Mar. 13; Next, Apr. 17
- Wood Products, Glass, Explosives, Chemicals: Last, Mar. 20; Next, Apr. 24
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 27; Next, May 1
- Wage Rates, Building Board, Lath, Insulation: Last, Mar. 27; Next, May 1

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in." truckload del." per block		CONCRETE Ready Mixed 1:2:4 del.
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	80 cy & over
Atlanta	$4.75am	$3.94am	$3.60m	$2.28	$2.28	$2.50‡	$2.18	$2.33	$1.65	$1.75	$0.175	$ .21	$14.50g
Baltimore	4.45a	4.05a	3.52a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.30/13.80
Birmingham	4.23	3.30f	....	2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	.18	.18	12.55
Boston	5.80ei	4.74i	4.79e	3.00am	3.00am	3.00am	1.75am	1.85am	....	....	.23	.275a	15.00k
Chicago	4.13ag	3.87a	3.90/3.95	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	.25	.25b	13.50
Cincinnati	4.50c	4.05c	4.05c	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	.19	.24a	13.25
Cleveland	N.A. in C.L.	....	3.88c	2.25ef	2.10f	1.75	4.50‡a	4.50‡a	3.45‡a	3.45‡a	....	.22	16.15
Dallas	3.75a	3.25a	3.63	2.65	2.70	1.90	2.43	2.63	....	....	....	.27	12.00
Denver	4.79a	4.29a	4.79	1.90	2.05	1.20	....	....	....	....	.22	.245a	10.70
Detroit	4.10a	3.80ag	3.78ag	4.50‡b	4.50‡b	4.25‡b	3.75‡	3.75‡	3.50‡	3.50‡	.23	.24a	14.20
Kansas City	4.23a	3.83a	4.10a	....	....	1.70‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	13.50
Los Angeles	5.12ak	4.68ak	5.60	2.50‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a	....	....	.14fm	.24m	12.95k
Minneapolis	4.44a	4.04a	4.10a	2.70‡ag	2.70‡ag	1.60‡ag	3.75‡ag	3.75‡ag	....	....	.19	....	14.30f
Montreal	3.21d	2.96d	3.60	1.90‡a	2.15‡a	2.25‡a	1.90‡s	2.15‡s	2.00	2.00	.20	.20a	10.80ek
New Orleans	3.75a	3.45a	3.70	2.44	2.44	2.00	....	....	1.45	1.65	.275	....	13.65
New York	4.83a	4.42a	3.72	3.20bk	3.20bk	2.30bk	3.10bl	3.10bl	....	....	.250n	.276b	17.40an
Philadelphia	4.57‡a	4.16‡a	3.61‡	2.85‡a	2.85‡a	2.35‡a	2.70‡	2.80‡	2.00	2.35	.25/.32	....	14.15do
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.60aq	2.60aq	3.00aq	2.00e	2.00e	2.20	2.20	.26	.28	15.80
St. Louis	4.16/4.45c	3.76/4.05c	3.86/4.18	3.25am	3.10am	2.40/3.10am	1.65‡	1.75‡	....	....	.24	.30c	12.65/13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28el	12.75c
Seattle	4.27a	3.75a	4.45a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.26	.37c	13.90y
Toronto	4.03a	4.03a	4.03a	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	.26	.275c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: *a Less 10¢ disc, 15 days. *b Less 2% disc, 15 days. *c Less 10¢ disc, 10 days. *d Truckload lots, deliv. 10¢ disc, 20 days. *e Truckload lots *f Fob mill, add 14.58 to $21.31 per car switching charges *g fob mill + freight *h LCL. *i Less 2% disc, 10 days *j Truck lots, fob yard *k 100 bag lots *l over 150 sacks *m Incl. 4¢ Ga. frt. increase

SAND GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons or more. *e ½". *f Pea gravel. *g Less 5% for cash. *h Less than 5 tons. *i Plus 5% mun. & prov. tax *j F.o.b. quarry. *k Barge lots add. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *q fob yard

CONCRETE BLOCK: *a Cinder *b Waylite. *c Haydite. *d Celocrete *e 5¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 16.

READY MIXED CONCRETE: *a 5 cu. yds. or over del. Man. *b 28 cu. yds or more. *c 10-100 cy. brackets. *d 1-3 mi. zone. *e 2,000 lb comp. *f 2,500 lb. comp. *g Less 25¢ disc, 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 5% mun. & prov. *l 1:2½:3½. *m F.o.b. yard. *n Plus escalator clause. *o Add 15¢ for ea. add'l 1-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable.

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45†	Buffington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.45†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.58†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Lesley, Pa	3.35†	Giant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alsen, N. Y	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of* 1958.

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 10-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	.....	.....	.....	$30.50	$45.00	$0.15	$0.26	$0.125Fw	$0.28Fw	$0.14	$0.125	$0.30
Baltimore	180.00‡	.....	.....	23.00i	.....	.095s	0.185i	.10swE	.19swE	.10i	.105i	0.195i
Birmingham	.....	82.00i	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Boston	.....	.....	.....	24.00ap	46.00ap	24a	48a	.11aFw	.24aFw	.11ao	.174aGo	.35aGo
Chicago	180.00‡	90.00‡b	3.95/4.00‡j	24.25b	34.25b	21.40bv	31.40bv	.11bwH	.19bwH	.085b	.....	.....
Cincinnati	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cleveland	.....	89.50d	6.30g	26.50A	.....	26.50Ar	.....	.1180AwF	.....	.....	.1180AG	.21AG
Dallas	e	40/78	e	26.35	45.39	.1116	.1944	29.85	51.40	.1080	.1116	.1944
Denver	.....	58.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	113.00	.....	29.65	.....	29.65v	.....	12.85l	.....	.1026	.....	.25
Kansas City	e	e	e	16.80cl	.....	16.80v	.....	.0825cwJ	.....	.06i	0.125v	.....
Los Angeles	e	.....	e	22.50dmz	.....	22.50dmz	.....	24.00dzK	.....	23.00dz	.1038j	.2038j
Minneapolis	.....	.....	3.73h	26.00	.....	29.50v	.....	0.115w	.....	0.105	.134	.....
Montreal	e	e	e	32.50n	44.80n	.176n	.226n	18.70nwE	23.70nwE	.154n	.242ns	.27ns
New Orleans	.....	.....	.....	20.00e	.....e	20.00rv	.....r	.095ew	.....e	.085B	.095BL	.....
New York	.....	.....	3.70f	25.99m	47.94m	25.99nl	47.94nl	11.61uF	21.01uF	.....	11.63u	21.11u
Philadelphia	175/185	110/120	4.08	24.00	.....	24.00	.....	11uF	.....	.105	.....	.....
Pittsburgh	60.00k	99.12in	6.35	32.40i	.....	32.40iz	.....	.1411i	.....	.14‡	1411i	.....
St. Louis	.....	.....	.....	22.80f	.....	.1825	.....	.1035fieM	.....	0.185	826	.....
San Francisco	.....	70.00c	.....	24.50g	41.50g	25.50gkv	41.50gkv	25.50gN	43.0ygN	25.25eg	25.50yv	.2063y
Seattle	.....	.....	.....	27.00s	42.00A	27.50s	.....	28.50K	.....	26.25kv	25.50kv	46.10krv
Toronto	.....	125.50	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

PAVING BRICK & BLOCK: *b 3 x 3½ x 8. *c 2½ x 8¼ x 4. *d LCL, truck deliveries. *e Not used. *f 2" Interior 8# treat. *g 3" *h 2" tr, 8# *i 3 x 3½ x 8½. *j 2½", 8 lb. tr. *k Used. *l Redshale; *m Pine; oak $8.57. *n Truck del.

ASPHALTS: *a Price at plant, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segunda. *e F.o.b. Baton Rouge. *f F.o.b. Wood River, Ill. *g F.o.b. Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 penetr. *l Less than 100 penetr. *m 40/300 penetr. *n Fed. tax included; add 5% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks. *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland. *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS, SS. *H RC 0-5 incl. *I MC 4. *J MC, RC $0.065 *K MC 3, 4 & 5. *L MS. *M MC 1-5, RC 1-5, $0.106. N MC 3. *O Truckload. *P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums. *Q F.o.b. Eldorado, ARK.

IT'S BIG • IT'S PROVEN • THE NEW

35 TON CAPACITY CRANEMOBILE®

HIGH LIFTS—New 35 Ton CraneMobile has added stability to lift bigger loads at greater radius. Maximum boom raises from horizontal to highest working position without assistance.

HEAVY LIFT—Fine balance with added power and weight handles heavy lift jobs with ease and precision and with power controlled lowering against machinery and engine.

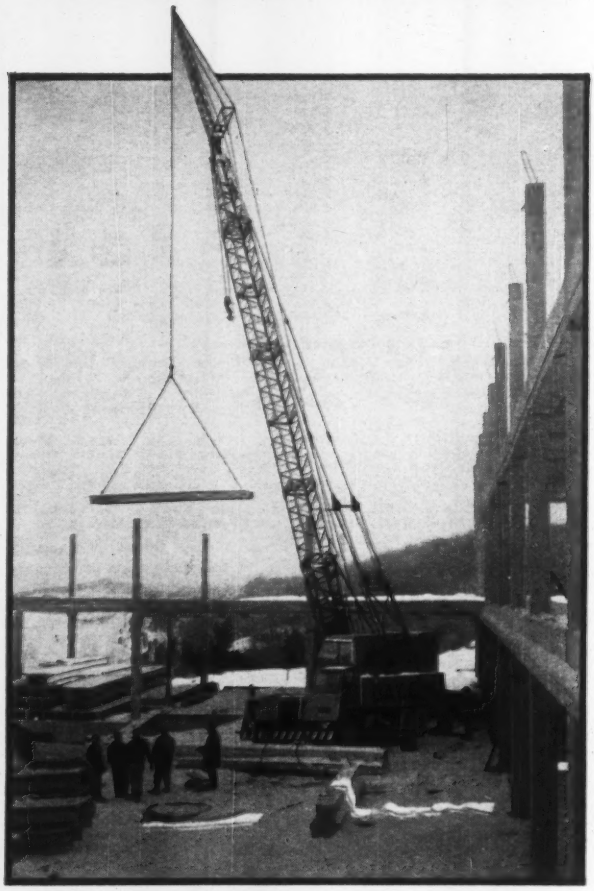
FAST, POWERFUL BOOM HOIST is power operated, fully independent . . . raises boom and/or load through internal 2-shoe friction clutch . . . lowers through an overrunning type clutch to give precise control at all boom angles.

PIN-CONNECTED BOOM of high strength alloy steel main chords and bracing is quickly assembled or dismantled. Supported by cable suspended floating bridle and matching cable pendants the boom may be lengthened or shortened without changing boom hoist cable.

TANDEM DRUMS—Drums, mounted in ball bearings and in tandem for best cable lead, are of cast steel with nickel-iron brake flanges for long wear, better service. Clutches and brakes are external contracting band type. Main hoist drum has capacity of 650 ft. of ¾ in. cable . . . front drum handles 440 ft. of ¾ in. cable . . . assuring ample cable for any job.

POWER LOAD LOWERING is a special device furnished for accurate control. Lowers heavy loads at 6 in. per sec. on single line . . . 1 in. per sec. on a 6-part block without using brake.

CRANE CARRIER is a heavy-duty pneumatic-tired carrier, designed and built by BAY CITY, to provide maximum mobility and flexibility for high speed road travel or off-the-road service. Will climb a 40% grade . . . speeds range to 29 MPH.



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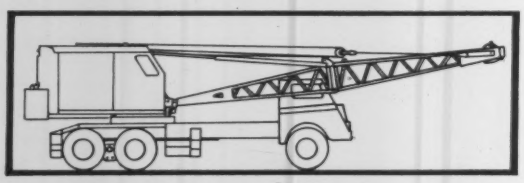
Sperber Crane Corp., So. Kearney, N. J., recently added this new 35 Ton crane to their fleet of CraneMobiles (above). It is shown handling pre-cast concrete sections weighing 4 to 5 tons each, working at a radius of 50 to 55 feet with 80 foot boom and 30 foot jib. • Wheelbase 222 inches. Height 12′-2¼″. Carrier—10′-1¼″ wide. Overall length with 30′ boom in traveling position 45′ long. Gasoline engine for crane 525 cu. in. displacement, 115 net HP. Carrier 779 cu. in. displacement, 221 net HP. **Write for full specifications on the new, big 35 Ton CraneMobile.**



BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† Me., Bangor—ALERT HANGAR FIGHTER A/C—BA On Or About 4/25—U. S. Eng., 150 Causeway St., Boston 14, Mass., Alert Hangar Fighter A/C at Dow Air Force Base, ENG-19-016-58-131. $450,000-$550,000. Plans deposit $15. CD 9/17.

▲† Mass., Falmouth—MISSILE FACILITY—BA On Or About 5/7—U. S. Eng., 150 Causeway St., Boston, constr. missile facility (FY 58) Otis Air Force, ENG-19-016-58-127. Over $10,000,000. Plans deposit $150. CD 12/12.

BUILDINGS—BA

▲ Mass., Everett — HOSPITAL — BA 4/25 — Whidden Memorial Hospital, 780 Broadway, hospital wing addn., Garland St. $1,000,000. Plans deposit $50. Valtz & Kimberley, Inc., 820 Lynn Fels Parkway, Melrose, archt. CD 4/20/55.

BUILDINGS—SLC

▲ Vt., Burlington—FEDERAL—General Services Admin., Public Bldg. Service, F St. between 18th and 19th Sts. N.W., Wash. 25, D. C., soon lets contract constr. 1 story, mezzanine, part 6 story bldg., approx. 134,580 sq. ft. floor area, etc., U. S. Post Office and Courthouse Elmwood Ave., Pearl St. and George St. (lease-purchase). $2,710,000. Extended date. Freeman, French & Freeman, 158 Bank St., archts. CD 2/19.

HEAVY CONSTRUCTION—LB & CA

▲ MAINE—State Hy. Comn., Augusta, Bids opened 3/26.

W. H. Hinman, Inc., North Anson, Me., CA $2,048,358 (5 bidders) grav. road 2.33 mi. Interstate 95, FAP No. I-080-4(7), Falmouth and Cumberland.

† J. H. Manning Corp., P.O. Box 744, Bangor, Me., LB $196,000, est. $200,000-$300,000; rocket storage Bldg. Unit B, Dow Air Force Base, ENG-19-016-58-66, BANGOR, ME. U. S. Eng., 150 Causeway St., Boston, Mass. Anderson, Nichols & Co., 150 Causeway St., Boston, Mass., archts.-engrs. Bids Mar. 21. CD 3/17.

† Empire Gas Engineering Co., Inc., 7 Baltimore Pl. N.W., Atlanta, Ga., CA $633,893, est. $703,266, aircraft fueling facilities, Loring Air Force Base, ENG-19-016-58-83, LIMESTONE, ME. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Mar. 12. CD 3/19, under LB.

Civitarese-Piatelli Constr. Corp., 139 Providence St., Hyde Park, Mass., LB $573,665, est. $581,941, flood control work, Beaver Brook and Middle River, vicinity of Webster Square, Worcester, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Mar. 25. CD 3/17;
Turner & Brievogel, Inc., Falmouth Heights, Mass., LB $158,151, est. $145,800, extension and reconstr. stone jetties and constr. stone revetment, Sesuit Harbor, Dennis (Massachusetts).

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Warner Bros., Inc., Main St., Sunderland, Mass., CA $1,378,440, est. $1,801,602, hy. reconstr. relocation Rte. 9, F-44(5), Cummington. Bids Jan. 28. CD 3/18, under LB.

▲ MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Marinucci Bros. & Co., 51 Ceylon St., Dorchester, Mass., CA $6,104,178, highway and bridgework, Rte. 128 and American Vets Memorial Hy., FA Proj. U-229(13) U-344(10), Milton-Randolph-Quincy and Braintree. Bids Feb. 25. CD 3/3, under LB.

† C. J. Maney Co., Inc., 173 Bedford St., Lexington, Mass., LB $433,740, est. $499,066, utilities FY-58, Laurence G. Hanscom Airfield, ENG-19-016-58-90, BEDFORD, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Charles A. Maguire & Assoc., 14 Court St., Boston, Mass., archts. Bids Mar. 25. CD 3/4.

† Franchi Constr. Co., Inc., 216 Webster St., West Newton, Mass., LB $423,000 Addn. $17,000, est. $487,100 Addn. $31,100, airmen's dining hall, Otis Air Force Base, ENG-19-016-58-84, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Cull, Robinson & Green, 385 Benefit St., Providence, R. I., archts. Bids Mar. 21. CD 2/17.

Mobil Oil Co., Inc., 134 Forbes Ave., New Haven, Conn. Owner Builds. $568,796, 8 steel oil storage tanks, relocate 16 existing storage tanks, NEW HAVEN, CONN. CD 3/26.

▲† Western Contg. Corp., 400 Benson Bldg., Sioux City, Ia., LB Approx. $2,275,000 (4 bidders) (based on unit price of 0.875 cu. yd.), dredge 2,672,500 cu. yd. Channel of Thames River, 13,000 ft. length, 300 to 900 ft. wide to 30 ft. depth, GROTON and NEW LONDON, CONN. Third Naval Dist., P. Wks. Office, 90 Church St., New York, N. Y. Bids Mar. 20. CD 2/27.

BUILDINGS—LB & CA

▲ Columbia Constr. Co., 11 Hanover St., Malden, Mass., LB $1,782,000, U-57-1 (Second Section) SCIENCE CENTER, AMHERST, MASS. Commonwealth of Mass., University of Mass., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Mar. 28. CD 3/14.

Housatonic Development Corp., Melroy Rd., West Haven, Conn. Owner Builds. $550,000, 55 HOUSES "Milhaven Heights", Meloy Rd., second section, WEST HAVEN, CONN. CD 8/28/56.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† N. Y., Westhampton Beach—STORAGE FACILITIES—BA 4/24—U. S. Eng., 111 E. 16 St., New York, Zone 3, ADC type ammunition storage facilities (FY-1958 Program) Suffolk County Air Force Base, ENG-30-075-58-230. $600,000-$800,000. Plans deposit $25. CD 8/22/56.

† N. Y., Rome—MEN'S OFFICERS QUARTERS—BA 4/30—U. S. Eng., 111 E. 16 St., New York, Zone 3, men's officers quarters, Griffiss Air Force Base, Serial No. ENG-30-075-58-218. $500,000-$600,000. Plans deposit $10. CD 9/17.

▲† Del., Dover—AIRPORT IMPRVS.—BA On Or About 5/1—U. S. Eng. Dover Air Force Base, Dover, 500 units, Armed Services Housing, Dover Air Force Base, ENG-11-626-58-4 CH. Plans deposit $100. CD 9/18.

BUILDINGS—BA

† Md., Cumberland—BLDG. CASE FACILITY—BA 4/15—Dist. P. Wks., Office, Fifth Naval Dist., Bldg. N-26, U. S. Naval Base, Norfolk, Va., bldg. case bonding facility, Allegany Ballistics Laboratory, Contr. NBy-15316, Spec. No. 15316/58.

▲ Pa., Phila.—HOUSING—BA 4/15—Phila. Housing Auth., 42 S. 15th St., 189 unit Whitehall Housing Proj., Valley and Margaret Sts. (PA-2-34). $2,450,000. Plans deposit $50. Norman N. Rice, 2400 Pine St. archts. Bloom & Dorman, 1411 Walnut St., engrs. CD 11/29/55.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ N. J., West Milford—SCHOOL—BA 4/25—Bd. Educ., Macopin Rd., Paradise Knolls and Hillcrest Schools addns. $2,100,000. Bids Feb. 28 rejected, CD 3/11, under LB.

▲ Mass., Lexington—SCHOOL—BA 4/29—Town, Supt. Schools, 1475 Massachusetts Ave., Junior High School, off Burlington and Adams St. $2,000,000. Plans deposit $50. Charles H. Cole, 55 Waltham St., archt. CD 9/13.

▲ N. Y., Jamestown—POST OFFICE—BA 5/9—General Services Admin., Public Bldg. Service, 19 and F Sts. N. W., Wash., D. C., post office. (lease-purchase) $1,840,000. Beck & Tinkham, Bailey Bldg., archts. CD 10/31/55, under Public Buildings.

HEAVY CONSTRUCTION—LB & CA

Peter Kiewitt Sons' Co., Inc., Waddington, N. Y. LB $698,931 Schedules I and III, Schedule I, boat basin on western end of Barnhart Island, gate wells and sewerage facilities, Clarke Point near Waddington, Schedule III, roads and landscaping for St. Lawrence Power Proj., NEW YORK. Power Auth. of the State of New York, 270 Broadway, New York 7, N. Y. Bids Mar. 27. CD 3/11;
A. S. Wikstrom, Inc., Skaneateles, N. Y. LB $49,830, Schedule II trash boom 3,800 ft. long, at Long Sault Dam (New York).

† R. and I. E. Equipment Div., I.T.E. Circuit Breaker Co., Greensburg, Pa. LB $974,000 (3 bidders) Contr. NP-6, furnishing misc. electrical equip. for Lewiston Power Plant of Niagara Power Proj. incl. 13 sets of 15-kilovolt insulated phase bus conductors, NEW YORK. Power Auth. of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Mar. 27. CD 3/3.

Keyfield Constr. Co., 130 Cutter Mill Rd., Great Neck, N. Y. CA $948,000 (8 bidders) Contr. B-160-013, constr. pier shed, incl. paving and utilities exclusive of foundations and structural steel for new Pier 10, Brooklyn-Port Authority Piers, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Mar. 18. CD 3/20, under LB.

▲ Gramercy Constr. Co., 114 Liberty St., New York, 6, N. Y. CA $1,122,882, Contr. NYA-420,002, commissary bldg., New York International Airport with paving and utilities, IDLEWILD, N. Y. The Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids Feb. 25. CD 2/28, under LB.

▲ New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y., rejected bids Feb. 7, constr. part of Rapid Transit Railroad, Sect. 3 of Route No. 112, Manhattan Boro, NEW YORK, N. Y. LB $9,160,885. CD 2/11, under LB.

Philip J. Levin, 104 W. 4 St., Plainfield, N. J. CA $595,000, brick, masonry bathing pavilion, 4th Ave., ASBURY PARK, N. J. City, City Hall, Asbury Park, N. J. CD 1/22, under LB.

▲† Paul Fishman, 21 E. 70 St., New York, N. Y. CA $2,668,978, general contract BOMARC facilities, McGuire Air Force Base, Phase 2, Neg 58-11, WRIGHTSTOWN, N. J. -U. S. Eng., 2655 Abbottsford Rd., Phila., Pa. Wigton Abbott, 1225 South Ave., Plainfield, N. J., archt.-engr. CD 3/12.

▲ PENNSLYVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 3/27.

Pa.—New Enterprise Stone & Lime Co., Inc., New Enterprise, Pa. LB $739,024 constr. 20,590 ft. course aggreg. base with bit. surf. 22 ft. wide, 2 rein.-con. bridges, T. R. 31-96, Manns Choice Boro Harrison and Napier Twps., Bedford Co.;

Pa.—Glasgow Inc., Glenside, Pa. LB $3,945,670 (11 bidders) constr. 22,999 ft. divided hy. rein.-con. 24 ft. wide each side divisor, 7 bridges. Media-By-pass. T. R. 1, Middletown, Upper Providence, Marple and Springfield Twps., Delaware Co.;

Pa.—Collins & Maxwell Roadmakers, Inc., 600 Bushkill Dr., Easton, Pa. LB $440,871 (7 bidders) constr. 7,081 ft. c. conc. base with bit. surf. 46 ft. wide with tfc separator; 1 bridge T. R. 987, Allentown City, Hanover Twp., Lehigh Co.;

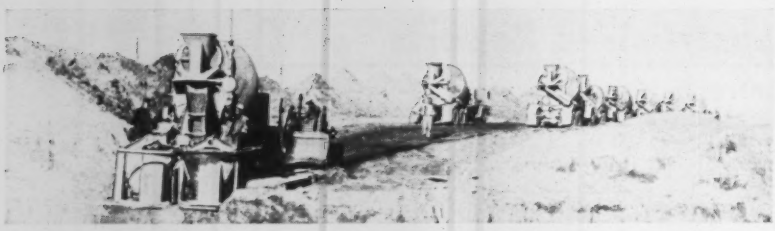
Pa.—McCloskey & Co., 1620 W. Thomoson St., Phila. 21, Pa., LB $4,410,534 (6 bidders) 3,820 ft. depressed divided hy. rein.-con. variable in width 4 plate girder bridges walls, Roosevelt Blvd. Eten. Phila. Phila. Co. CD 3/6.

▲ PENNSYLVANIA—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

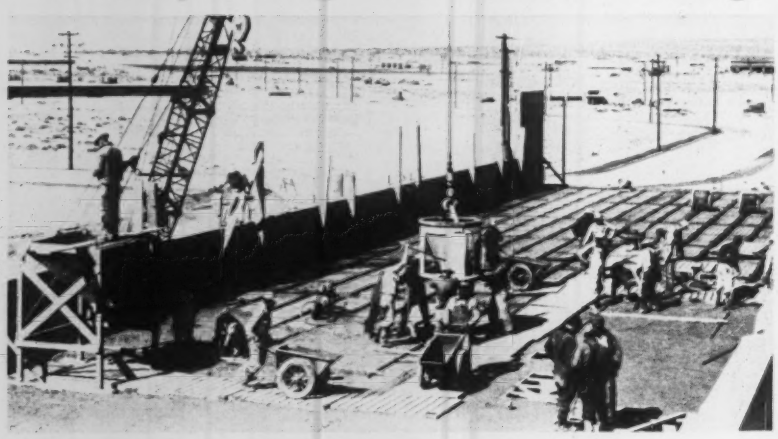
Pa.—The Conduit & Foundation Corp., 158 N. 20th St., Phila. 3, Pa. LB $4,108,324 (6 bidders) 3,516 ft. divided hy. each rein.-con. decks on poles variable in width, Schylkill Expressway from Walnut St. to University Ave. Bridge (Proj. 815-1) FAI Interstate, Phila., Phila. Co.;

Pa.—John F. Casey Co., Box 1888, Pittsburgh 30, Pa. LB $1,275,583 (7 bidders) 7,908 ft. rein.-conc. road various in width retaining walls and ramps and curbs as section of Penn-Lincoln Pkwy and Blvd. of Allies. (Proj. 810-1) FAI Interstate. Pittsburgh, Allegheny Co.;

Pa.—Henpt Bros. Inc., R.D. 1, Camp Hill, Pa. LB $337,329, 12,831 ft. rein.-con. variable in width and course aggreg. base with bit. surf. (Proj. 812-1) Interstate, Swatara and Lower Paxton Twps., Dauphn Co. CD 3/5.



Concrete job pays extra profits for careful planning of concrete handling



Concrete construction on this 300′ x 600′ airplane hangar required two types of concrete handling—(1) bulk handling for columns, foundation and 17″ thick walls and (2) slower paced handling for thin finished floor slabs. The problem was—how to prevent delays and inefficiencies in one or both placement jobs.

The answer here was to divide the work and use two separate crews and two concrete handling methods simultaneously.

First, two Gar-Bro Buckets per crane were used for the bulk placing. While one bucket was being filled, the other was placing concrete. Thus with a minimum crew, a fast pace was maintained.

Second, Gar-Bro Floor Hoppers and a fleet of Concrete Carts supplied the slab work. The concrete buckets load the floor hoppers for cart charging and alternate for direct column pouring, thus holding the balance of the operation.

In this way there were no delays and no interruptions of work. A steady delivery of concrete by ready mix trucks provided maximum efficiency.

Since every wasted minute costs money on a concrete job and delays cost more than equipment, it pays to plan each job properly. Many similar innovations are described in the regular issues of Gar-Bro Concrete News and the Gar-Bro Concrete Manual, available on request.

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EQUIPMENT GAR-BRO ENGINEERING SERVICE

Harry Gill Co., 6326 Market St., Phila., Pa. LB $550,500, Bid 6058, Piers 38 and 40 and railroad facilities alterations South Delaware River, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Thos. C. Brown, Chief Phila. Div., Port Operations, c/o owner, engr. Bids Mar. 14. CD 2/26.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
John D. Sheetz Constr. Co., Halethrope, Md., LB $122,453 (9 bidders), single span steel beam bridge relocation Pleasantville Rd. over Winters Run. H-423-1-417, Harford Co. Bids Mar. 18. CD 2/28.

Lackawanna Engineering & Constr. Co., 207 Sampson St., Old Forge, Pa. LB $143,977 (6 bidders) sewer constr. in Marlboro Pike, 62nd Place, Walker Mill Rd., Oakwood Lane and Weber Dr., Contr. 2006-S, HYATTSVILLE, MD. Wash. Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids Mar. 24. CD 3/19.

▲† **C. J. Langenfelder & Sons**, P. O. Box 5106, Baltimore, Md. CA $1,712,598, Item I, pavement repairs and Seaplane Ramp at U. S. Naval Air Station, NBy-11426, PATUXENT RIVER, MD. Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. Bids Mar. 19. CD 3/24, under LB.

BUILDINGS—LB & CA

Mars Assocs., Inc. & Normel Constr. Corp., 271 Church St., New York 7, N. Y., CA $578,000, rehabilitation of New York City Community COLLEGE of APPLIED ARTS and SCIENCES, 300 and 302 Pearl St., BROOKLYN, N. Y. Dpt. P. Wks., Municipal Bldg., New York, Zone 7, N. Y. Bids Feb. 19. CD 3/28, under CA. (Correction—cost).

▲ **William E. Bouley Co.**, 33 William St., Auburn, N. Y., CA $1,633,500, general contract, FOOD PROCESSING RESEARCH BLDG., at New York State Agricultural Experiment Station, GENEVA, N. Y. Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Jan. 23, awarded Mar. 20. CD 1/29, under LB.

▲ **Mooney Constr., Inc.**, 2070 Sheridan Rd., Buffalo, N. Y., Owner Builds, $1,250,000, 70 HOMES, Grand River Estates adjacent to Beaver Island Parkway, 1½ mi. from South Grand Island Bridge, GRAND ISLAND, N. Y.

▲ **Mooney Constr., Inc.**, 2070 Sheridan Rd., Buffalo, N. Y., Owner Builds $1,000,000, 30 HOMES, Willow Grove Sub-division of Ellicott Creek Rd., TONAWANDA, N. Y.

▲ **John Oechslin, Inc.**, Commack Rd., Commack, N. Y., CA $1,197,200, Harborfields Central HIGH SCHOOL, GREENLAWN, N. Y. Bd. Educ., Central School Dist. 6, Greenlawn, N. Y. Bids Mar. 3. CD 3/6, under LB.

▲ **Frank W. Bogert**, Teaneck Rd., Hackensack, N. J., CA $1,000,000, 3 story air-conditioned, brick, steel, glass HOSPITAL to accommodate 64 beds, two gymnasiums, ORANGE, N. J. New Jersey Orthopedic Hospital, 179 Lincoln Ave., Orange, N. J. CD 2/13/57.

Cindy Builders, Att. Frank Pietronio, Asbury Park, N. J., CA $700,000, MARINE MOTEL, sewerage plant, swimming pool, restaurant, stores, bulkheads and docks, POINT PLEASANT, N. J. Bayhead Marine, Point Pleasant, N. J. Harmon Schroeder, 287 Bloomfield Ave., Caldwell, N. J., archt.

▲ **Levitt & Son, Inc.**, Levittown Parkway, Levittown, Pa. Own Forces, $250,000,000. New Jersey Levittown HOUSING with utilities, Willing Boro Twp., Burlington Co., near RANCOCOAS, N. J.

John F. Wilson & Bros. Inc., 1150 York Rd. Abington, Pa. Separate Contracts. $518,000, RESIDENTIAL DEVELOPMENT (37) Blue Bell Rd., BLUE BELL, PA.

▲ **Madway Engineers & Constructors**, 107 Aberdeen Ave., Wayne, Pa. Separate Contracts. $4,500,000. 300 unit APARTMENT and parking area, Ardmore Ave. and County Line Rd., HAVERTOWN, PA.

Robert E. Lamb & Son, Inc., 3429 W. Indiana Ave. Phila. Pa. CA $950,000 1 story 20,000 sq. ft. RESEARCH and DEVELOPMENT LABORATORY KING OF PRUSSIA, PA. Robertshaw-Fulton Controls Co., 911 E. Broad St., Richmond, Va.

▲ **Louis Feldsher & Son**, 4401 Conshohocken Ave. Phila., Pa. CA $1,000,000 114 unit APARTMENT HOUSE, Belmont Ave. and city line, PHILA. PA. Feldcrest Corp. c/o contractor. A. Hyman, 912 Gilham St. Phila. Pa. archt.

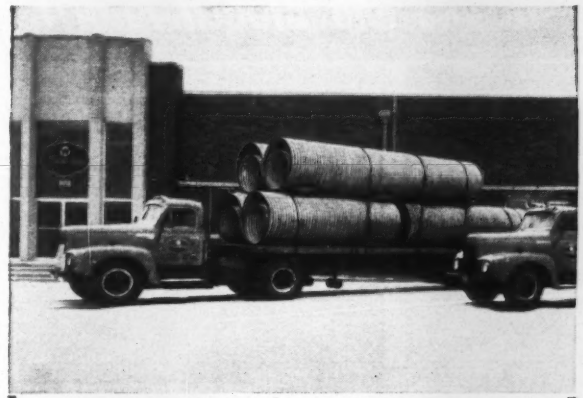
Fairchance Lumber Co., Fairchance, Pa. LB $623,500, general contract LABORATORY and other facilities for agricultural research on fowl and meat, at Pa. State University, UNIVERSITY PARK, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Mar. 26. CD 3/20.

▲ **S. G. Mastriani Co.**, 700 N. Blakely St., Dunmore, Pa. LB $1,104,500, general contract 2 patient WARD BLDGS. at Fairview State Hospital, WAYMART, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Mar. 26. CD 2/19.

▲ **Meadowbrook, Inc.**, 8555 Connecticut Ave., Chevy Chase, Md. CA $1,000,000. 67 unit APARTMENT, Manor Rd., Chevy Chase Lake, CHEVY CHASE, MD. Manor Lake, Inc., c/o M. J. Bagley, archt., 8555 Connecticut Ave., Chevy Chase, Md.

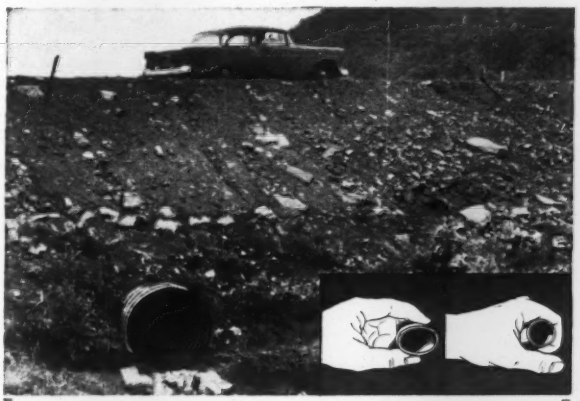
▲ **Hegeman-Harris Co., Inc.**, 30 Rockerfeller Plaza, New York, N. Y., LB est. $2,000,000 (4 bidders) 8 story, stone, concrete, brick OFFICE BLDG., WASH., D. C. Labor Cooperative Education & Publishing Society, 401 3rd St., N. W., Wash., D. C. William N. Denton, 1300 Connecticut Ave. N. W., Wash., D. C. archt. Bids Mar. 25, CD 3/14.

(Continued on page 85)



On-time delivery *of long, light sections of Wheeling Corrugated Metal Pipe helps keep highway construction on schedule. The nestability and light weight of metal pipe help cut transportation costs.*

Ordinary labor *and equipment can install most sizes of Wheeling Metal Pipe. No breakage problems either — metal pipe won't crack or spall when dropped. Men can work faster, highway construction is speeded.*



Flexibility under pressure *of surrounding soil adds strength to Wheeling Corrugated Metal Pipe. Pressure is spread around the perimeter. Try a simple test with a garden hose (inset) to see how it works.*

Long life *of Wheeling Metal Pipe boosts its value in years to come. Holds up under freezing and thawing . . . the constant pounding of traffic. In fact, metal pipe ordinarily lasts longer than the road itself.*

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Add up the cost-cutting features of Wheeling Corrugated Metal Pipe. You'll come up with the lowest cost-per-year of any type pipe on the market. Handling and installation, upkeep and repairs—all are less. And Wheeling Metal Pipe is salvable . . . often can be re-installed in a new location.

Wheeling Metal Pipe or Pipe Arch, in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) comes in a wide range of gauges and diameters.

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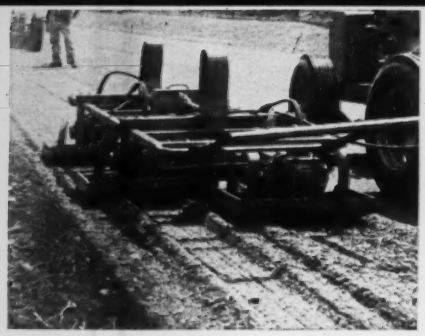
MACADAM DENSIFICATION. The Jackson Multiple Compactor gives you base and sub-base compaction at its quickest and best. Each of the 6 units in workhead delivers 4200 3-TON BLOWS per minute.



PAVEMENT WIDENING. Any arrangement desired of the vibratory units of the Jackson to fit the job most advantageously and provide 100% of required density in ONE PASS is easily and quickly made.

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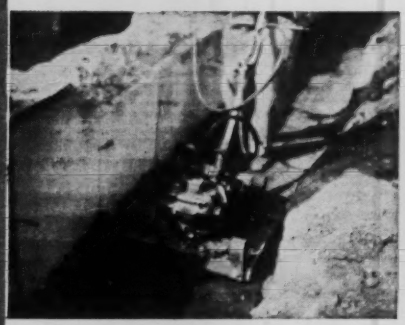

SOIL COMPACTION. Self-propelling, the Jackson Compactor, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 6" to 8" layers at the rate of 600 sq. yds. per hr. Perfect for bridge and pipe line fills, concrete floor sub-bases and similar applications.

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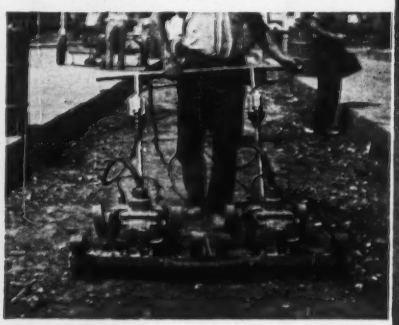
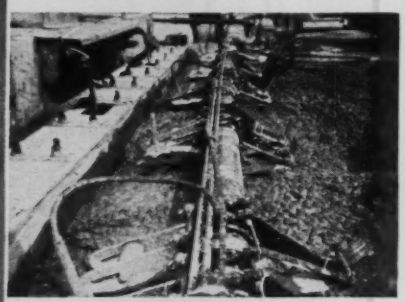
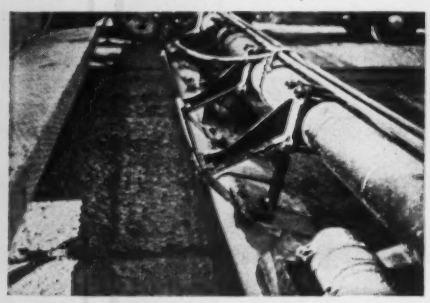


TWIN-UNITS — ONE OPERATOR. With a two-unit, side-by-side or tandem hookup of JACKSON COMPACTORS, one man can readily do the work of two, since the compactors are self-propelling and he has only to guide them.





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MUNICIPAL PAVING: This vibratory screed strikes off to all crowns, undercuts at curb or sideform, works right up to and around obstructions, is rolled back for second passes on 4 rollers. Most productive and convenient screed made.

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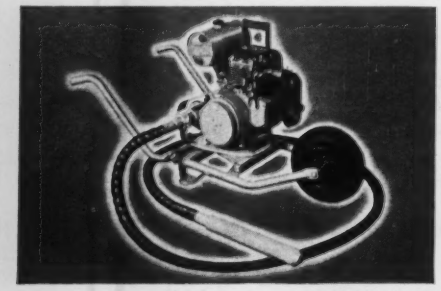

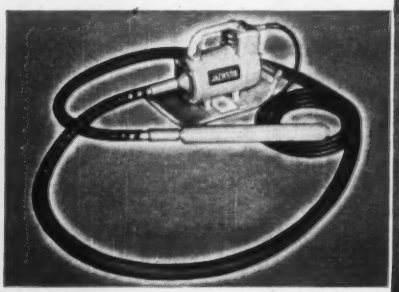

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(Left); 6 H.P. engine-driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2½ H.P. electric vibrator (for light-socket operation). Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

(Continued from page 82)

SOUTH

HEAVY CONSTRUCTION—LB & CA

VIRGINIA—Commonwealth of Va. Dpt. Hys., Central Hy. Office, Bldg. 1221 E. Broad St., Richmond, **Robert T. Main Co.**, Box 1, Salem, Va. CA **$518,702.** 3.05 mi. 2-25 ft x 5½ in., b. conc. beginning 4.24 mi. W. of WCL Winchester ending 1.19 mi. W. WCL Winchester Rte 50 State Proj. 0050-034-013 Contr. 2; 014 Old State Proj. 1934-13 Contr. 2; 14 Fed. Proj. F-014-1 (10); (11) Frederick Co. Bids Mar. 19. CD 3/25, under LB.

† **Eberle & White**, 249 S. 24th St., Phila. Pa. CA **$268,118** repairs Bldg. 172, Naval Shipyard, NBy 11030, PORTSMOUTH, VA. Pub. Wks. Office, 5th Naval Dist., U. S. Naval Base, Norfolk, 11, Va.

NORTH CAROLINA—State Hy. Comn., Raleigh, Bids opened 3/25,

N. C.—**Wm. B. Dillard Co.**, Sylva, N. C., LB **$196,220**, est. $200,000-$225,000, structures, 7.5 mi. US 70, addnl. lane on US 70, from co. rd. south of Valdese, East to Hildebran, Proj. 1-700 (15), Burke Co.;

N. C.—**Butler Bros. Constr. Co., Inc.**, Drawer 1260, Greensboro, N. C., LB **$74,927**, est. $75,000-$100,000, structure, NC 10 and 16, replacing bridge over Carolina and Northwestern Railway on NC 10 and 16 in Newton, Proj. 8.16224, SF-624 (3) Catawba Co.;

N. C.—**Columbus Constr.**, Whiteville, N. C., LB **$76,574**, est. $75,000-$100,000, structures, 10.1 mi. US 301, 2 addnl. grade separations and surf. on relocation of US 301 from US 70-A southeast of Selma, northeast of Kemly, Proj. 8.12351, Johnston Co. CD 3/10.

▲ **NORTH CAROLINA**—State Hy. Dpt., Raleigh, bids opened 3/25

N. C.—**C. C. Mangum, Inc.**, 3010 Hillsboro St., Raleigh, N. C., LB **$886,558**, est. $500,000, grading and structure 11.63 mi. addnl. lane on U. S. 70 between N. C. 54 and Efland, Proj. 8.16014 10644 (17), Alamance and Orange Counties;

N. C.—**Dickerson, Inc.**, Monroe, N. C., LB **$175,540**, est. $200,000-$225,000, CABC (shoulder Constr.) and bit. concrete surface, 19.0 mi., resurfacing US 52 from Wadesboro, North through Ansonville to point in Norwood, also streets in Wadesboro, Ansonville, Peachland, Polkton and Norwood, Proj. 8.16076, SE-229(12); SF-42(9); BS 7.651160; BS 6.651159; code 9/81021; code 9.81023; code 9.81027. Anson and Stanly Counties;

N. C.—**Wm. B. Dillard Co.**, Sylva, N. C., LB **$219,683**, est. $250,000, grading and 7.5 mi. addnl. lane on US 70 from county road south of Valdese, east to Hildebran, Proj. 8.17622. Burke Co.;

N. C.—**Clinchfield Concrete Co. Inc.**, Kingsport, Tenn. LB **$1,658,333**, est. exceeds $500,000, STBC concr. pavement BST shoulders 10.1 mi. US 301 2 addnl. surfacing on relocation of US 301 from US 70 a southeast of Selma, northeast to Kemly, Proj. 8.12351, Johnston Co.;

N. C.—**T. A. Loving & Co.**, Box 6355, Raleigh, N. C., LB **$83,823**, est. $100,000-$125,000, sand asph. base and surface, 3.88 mi., from county road intersection approx. 4.1 mi. south of Elizabeth City, southeast to Weeksville, Proj. 8.21654, S-890 (2), Pasquotank Co.;

N. C.—**Blythe Bros. Co., Inc.**, Box 989, Charlotte, N. C., LB **$93,048**, est. $75,000-$100,000, CABC (shoulder constr.) and bit. concr. binder and surface, 5.45 mi. resurfacing left lane of U. S. 29 and 601 from Cabarrus County line, northeast to a point in China Grove, US 29 and 601, Proj. 8.16738, SF-492 (7), Rowan Co.;

N. C.—**Thompson-Arthur Paving Co.**, Box 1197, Greensboro, N. C., LB **$250,319**, est. $250,000-$300,000, SABC and BST US 52 from a point approx. 2 mi. north of Mount Airy, northwest to Virginia State lines, US 52, 2.73 mi., Proj. 8.17622, F-490 (7), Surry Co.;

N. C.—**Propst Constr. Co., Inc.**, Box 752, Concord, N. C., LB **$78,109**, est. $75,000-$100,000. conditioning and BST 24.2 mi., surfacing eight sections of County Roads in Union Co., Proj. 8.27457, S-789 (2); S-975 (1), S-977 (1), S-980 (1), S-979 (1), S-978 (1), S-834 (2), S-976 (1), Union Co.;

N. C.—**W. E. Graham & Sons**, Cleveland, N. C., LB **$268,761**, est. $200,000-$225,000, CABC BST and structures, 1.57 mi. US 221, US 221 from a point approx. 2 mi. N.W. of Blowing Rock and approx. 400 ft. west of entrance to the Blue Ridge parkway, S.E. to a point in Blowing Rock, Proj. B.S. 6.751172, Watauga Co.;

N. C.—**Barrus Constr. Co.**, Box 395, Kinston, N. C., LB **$168,530**, est. $175,000-$200,000, STBC and bit. concr. binder and surface, 4.4 mi. N.C. 111, relocation of N.C. 111 between US 70 and US 117, Project 8.12896, R.-R.-D.-6 (1), Wayne Co. CD 3/10.

▲† **H. L. Coble Constr. Co.**, 1705 Battleground Ave., Greensboro, N. C., LB **$11,806,000** (8 bidders) 849-units Armed Services housing, Marine Corps Air Station, NBy (10716, FHA Proj. 053-81023-MC-3, CHERRY POINT, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Bldg. No. 26, Norfolk,

† **John C. Peterson Constr. Corp. & Pecon Corp.**, 6000 2nd Ave. N.E., Miami, Fla. (joint venture) LB **$1,150,870** (7 bidders) LeJeune interchange and airport roads, Miami International Airport, MIAMI, FLA. Dade Co. Port Auth., Bd. Comrs., Courthouse, Miami, Fla. Bids Mar. 25. CD 3/14.

▲† **William S. Smith Constr. Co.**, Box 5892, Jacksonville, Fla., LB **$1,318,000**, interim support facilities, Naval Air Station, NBy 10223, SANFORD, FLA. Dist. P. Wks. Office, Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids Mar. 27. CD 3/12.

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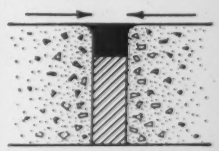
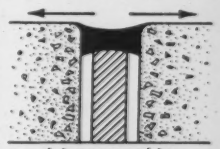
Para-Plastic is the *original* hot poured rubberized asphalt joint sealing compound that forms a resilient, adhesive and effective seal which maintains bond at sub-zero temperatures. Unaffected by extremes of temperature, Para-Plastic insures a moisture-tight seal of expansion, contraction and dummy joints in concrete pavement of all types. Para-Plastic JF is a special hot poured rubberized thermoplastic compound especially developed for sealing joints in pavement where they would be affected by spillage of jet fuel or other petroleum solvents used by aircraft.

Drawings at right illustrate sealing characteristics of Para-Plastic Joint Sealer during extremes of temperature.



Joints compressed in warm weather temperatures.



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MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson,
John H. Moon & Sons, Ridgeland, Miss., CA **$447,166** est. $428,000, three bridges crossing U.S.E.D. Yazoo River Diversion Channel on U.S. Hy. No. 49W, 0.212 mi. between Yazoo City and Louise, SP-49W-3 (1), Yazoo Co. Bids Mar. 25. CD 3/14.

▲ MISSISSIPPI—State Hy. Dpt., T. C. Robbins, dir., Jackson,
Miss.—**O. J. Stanton & Co.**, Greenwood, Miss., CA **$332,938**, est. $428,000, grade, drain, culverts, box bridge, bridge (alt. types) 5.886 mi. Mississippi Hy. No. 19 between Neshoba-Winston Co. line, SP F-026-1 (5), F-026-1 (8), Neshoba and Winston Counties; CA **$333,922**, est. $392,000, grade, drain, culverts, box bridge and bridge 7.316 mi. Mississippi Hy. No. 19 between Arlington and Winston County line. SP F-026-1 (7), Neshoba Co.;
Miss.—**L & A Contracting Co.**, Hattiesburg, Miss., CA **$3,321,475** est. $4,060,000, grade, drain, culverts, ½ box bridges, grade separation structure, alt. types of bridges 14.257 mi. U.S. Hy. No. 11 between Forrest Jones County line and Ellisville. SPI-091-2 (10) & I-091-2 (11), Jones Co.;
Miss.—**Bud's Sand & Gravel Co.**, Amory, Miss., CA **$346,173**, base, single bit. surf. treat. and modified sand asph. surf. course 3.451 mi. US Hy. No. 45 between Aberdeen and Nettleton. SP F-002-4 (5), Monroe Co.;
Miss.—**Cobb Bros. Constr. Co.**, Meridian, Miss., CA **$423,555**, sub-grade preparation base and double bit. surf. treat. 10.187 mi. Mississippi Hy. No. 19 between Vimville and Mississippi-Alabama State line, F-026-1 (10) and FG 026-1 (11), Lauderdale Co.;
Miss.—**Dickerson & Bowen**, Brookhaven, Miss., CA **$333,523**, est. $402,500. topping, base and double bit. surf. treat 16.004 mi. Mississippi Hy. No. 1 between Sherard and Delta Landing, EP F-052-1 (2) Coahoma Co.;
Miss.—**Mid-State Paving Co.**, Meridian, Miss., CA **$232,773**, est. $178,000, base and double bit. surf. treat. 8.794 mi. Mississippi Hy. No. 25 between Louisville ad Carthage. SP F-056-1 (11), Winston Co.;
Miss.—**W. E. Blain & Son, Contractors**, Jackson, Miss., CA **$214,483**, base and double bit. surf. treat. 9.532 mi. Mississippi Hy. No. 588 between Collins and Ellisville, SP S-0212 (2) A, Covington Co. Grand total $5,538,841. Bids Mar. 25. CD 3/14.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort. Bids opened 3/20.
Ky.—**A. W. Walker & Son**, Mt. Sterling, Ky., LB **$101,903** (2 bidders) bit. surf. Class C-1, 1.59 mi. The Jeffersonville-Stanton Rd. from end MP 87-77 E, 4 mi. south jct. 460 to Powell Co. line, SP 87-77, Group 12 (1958), Montgomery and Powell Counties; LB **$119,500** (3 bidders) b. conc. Class 1 surf. 0.516 mi. The Owingsville Olmypia Rd. (State Ave. in Owingsville) from Main St. (US 60) in Owingsville extending southerly to south corporate limit of Owingsville. S 434 (4) SP 6-104, Bath Co.;
Ky.—**E. B. Lowman**, 925 Greenup Ave., Ashland, Ky., LB **$190,913** (2 bidders) high type surf. 0.559 mi. US 23 in Catlettsburg from south corporate limit of Catlettsburg extending northerly to 34th St. in Catlettsburg. U 537 (5), SP 10-85, Boyd Co.;
Ky.—**Marion Contg. Co.**, Lebanon, Ky., LB **$168,757** (7 bidders) b. conc. surf. Class I, 11.605 mi. The Stearns-Monticello Rd. from east end bridge over little South Fork River (Wayne Co. line) extending to point 7.262 ft. southeast Yamacraw bridge, SP 74-93, McCreary and Wayne Counties;
Ky.—**Eaton Asphalt Paving Co.**, Sterrett and Donaldson Aves., Covington, Ky., LB **$108,846** (3 bidders) SP Group 8 (1958), Campbell, Boone, Gallatin and Kenton Counties;
Ky.—**Adams Constr. Corp.**, Paintsville, Ky., LB **$96,022** (1 bidder) SP Group 14 (1958), Pike and Letcher Counties;
Ky.—**Cantrill Constr. Co.**, 700 N. Broadway, Lexington, Ky.; LB **$83,586** (2 bidders) SP Group 15, 1958, Knott Co.;
Ky.—**Wood & Bush Co.**, 410 Ann St., Frankfort, Ky., LB **$797,765** (5 bidders) b. conc. Class I modified 8.243 mi. The Buckhorn-Chavies Rd. from near jct. Ky. 28 at Buckhorn extending easterly to Ky. 28 approx. 3.8 mi. southwest of Chavies, SP 97-982; SP 13-57 and SP 97-12, Perry and Breathitt Counties;
Ky.—**Circle Constr. Co.**, 814 State St., Bowling Green, Ky., LB **$99,949** (4 bidders) SP Group 1 (1958) Webster, Union and Hopkins Counties. CD 3/5.

▲ LOUISIANA—State Dpt. Hys., R. B. Richardson, dir., Hy. Office Bldg., Baton Rouge, Bids opened 3/26,
T. L. **James & Co.**, Ruston, La., LB **$1,576,941**, railroad underpass structure and other related work 3.615 mi. Summer Grove-Shreveport Hy. Rte. LA-US 171, SP No. 25-08-19, FAP No. U-68(16), Caddo Parish. CD 3/13.

▲ LOUISIANA—State Dpt. Hys., R. B. Richardson, dir., Hy. Office Bldg., Baton Rouge, Bids opened 3/26,
La.—**Boh Brothers**, 2400 Cypress, New Orleans, La., LB **$1,958,926**, grading, small drainage structures, interchange structure, c. conc. pavement, etc. 0.846 mi. Carrollton-Airline interchange (Ponchartrain Expressway) State Il, Rte. LA 3027, SP No. 283-08-05, Contr. No. 2, FAP No. I-524(4), Orleans Parish;
La.—**Reynolds & Williams**, Coml. Bank Bldg., Shreveport, La., LB **$1,870,297**, grading, drainage structures, aggreg. type or soil cement base course, c. conc. interchange structures and related work 4.205 mi. Ruston-Choudrant Hy., Rte. I-20, SP No. 740-00-22, FAP No. I-541(8), Lincoln Parish. CD 3/13.
C. O. **Osborn Contract. Co.**, 1520 29 Court S., Birmingham, Ala. LB **$226,547**, est. $250,000 laying 33,800 ft. sewer lines in Woodmore-Sequoia Section, CHATTANOOGA, TENN. City, City Hall, Chattanooga, Tenn. CD 11/8.

BUILDINGS—LB & CA

William S. James Constr. Co., Texarkana, Tex., LB **$526,473** (15 bidders), 64 unit Holiday Inn of America MOTOR HOTEL, Airline Hy., BATON ROUGE, LA. Southern Motels Investments Corp., 3160 Florida Ave., Baton Rouge, La. Blakewood Assn., 855 Commerce Bldg., Baton Rouge, La., archts. Bids Mar. 20. CD 3/7.

McInnis Bros., Minden, La. LB **$485,464** (12 bidders) AUDITORIUM for Grambling College, GRAMBLING, LA. State Bldg. Auth., Baton Rouge, La. D. Curtis Smith, Ouachita National Bank, Monroe, La., archt.

▲ **J. A. Jones Constr. Co.**, 3443 N. Market, Shreveport, La., CA **$1,869,000**, APARTMENTS for married students and faculty, NEW ORLEANS, LA. Tulane University 6823 St. Charles Ave., New Orleans, La. Bids Feb. 20, awarded Mar. 21. CD 1/30.

▲ **Southeastern Constr. Co.**, 309 Ludlow Ave., Cincinnati, Ohio, LB **$1,023,000**, SEMINARY BUILDING, ERLANGER, KY. St. Pius Seminary, Diocese of Covington, Madison Ave., Covington, Ky. Bids Mar. 18. CD 2/24.

James A. Baker, 112 19th Ave. N., Nashville, Tenn. LB **$489,000** men's DORMITORIES at Middle Tennessee State College, MURFREESBORO, TENN. State Purch. Dpt., Nashville, Tenn. Clayton B. Dekle, c/o owner, state archt. Bids Mar. 20. CD 4/4/57.

J. B. Regan Co., 2221 Bransford Ave., Nashville, Tenn. CA **$674,000** LAUNDRY BLDG., HEATING PLANT and SHOPS and installing meter electrical sys. NASHVILLE, TENN. Baptist Hospital, 2000 Church St., Nashville, Tenn. Hart, Freeland & Roberts, 3 National Bank Bldg., Nashville, Tenn., archts. CD 1/14.

MIDDLE WEST

BUILDINGS—BA

▲ **Wis., Racine**—SCHOOL—BA 4/30—Bd. Educ., Jerstad-Agerholm School. $2,000,000. Plans deposit $50. Extended date. W. Holmes Co., 2200 Michigan Nat'l. Tower Bldg., Lansing, Mich., archts. CD 3/18.

BUILDINGS—SLC

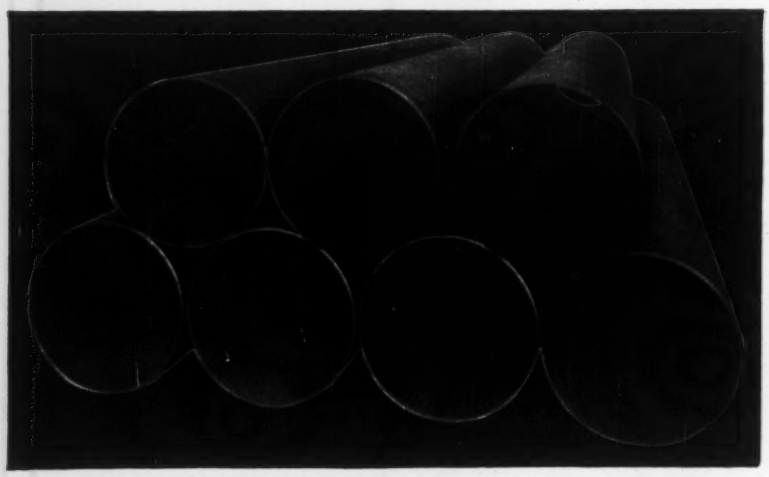
Ill., Chicago—FACTORY—BA 4/8—Phoenix Metal Cap Co., 2444 W. 16 St., 5 story, brick addn. to Factory Bldg. No. 8, 2444 W. 16 St., $750,000. Graham, Anderson, Probst & White, 201 N. Wells St., archts.

HEAVY CONSTRUCTION—LB & CA

▲ **Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O., CA **$3,496,857**, low service pumping station intake and tunnel under river, foundation work for station, intake pier on Kentucky side of river, CINCINNATI,

(Continued on page 89)

Large O.D. ALLOY PIPE



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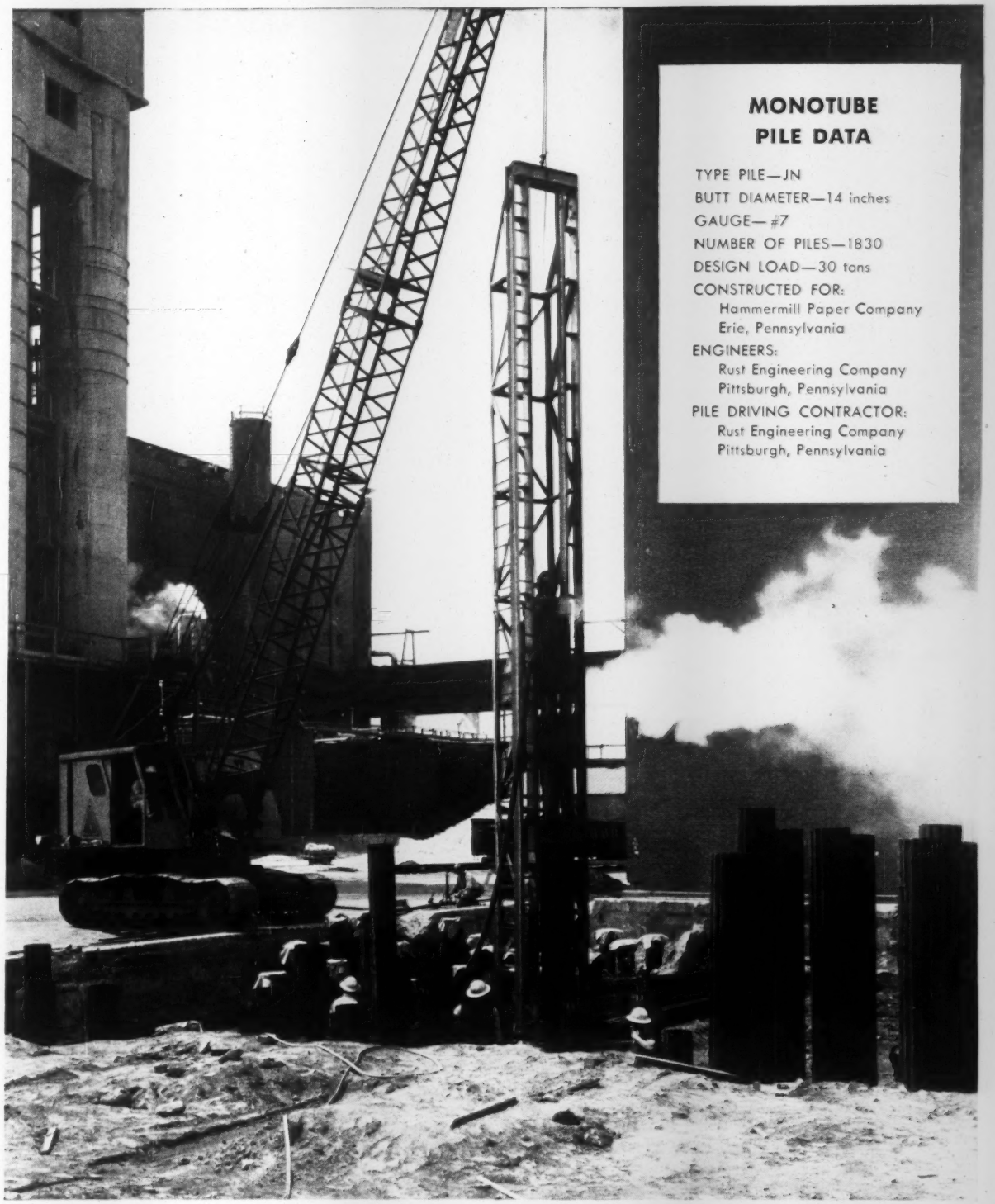

MONOTUBE PILE DATA

TYPE PILE—JN
BUTT DIAMETER—14 inches
GAUGE—#7
NUMBER OF PILES—1830
DESIGN LOAD—30 tons
CONSTRUCTED FOR:
Hammermill Paper Company
Erie, Pennsylvania
ENGINEERS:
Rust Engineering Company
Pittsburgh, Pennsylvania
PILE DRIVING CONTRACTOR:
Rust Engineering Company
Pittsburgh, Pennsylvania

DEPENDABILITY plus ECONOMY with Monotube piles. Fast installation of over 1800 Monotube foundation tubes is the progress report on this plant addition for Hammermill Paper Co., Erie, Pennsylvania.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. Write The Union Metal Manufacturing Co., Canton 5, Ohio, for complete information.

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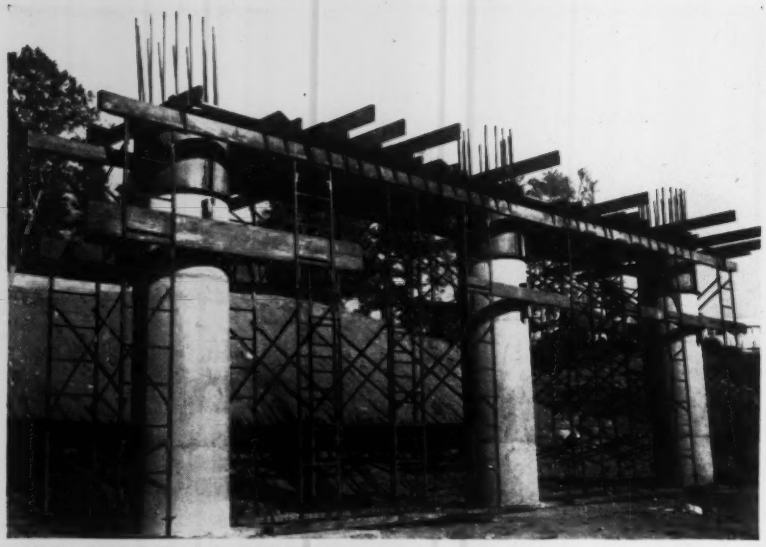
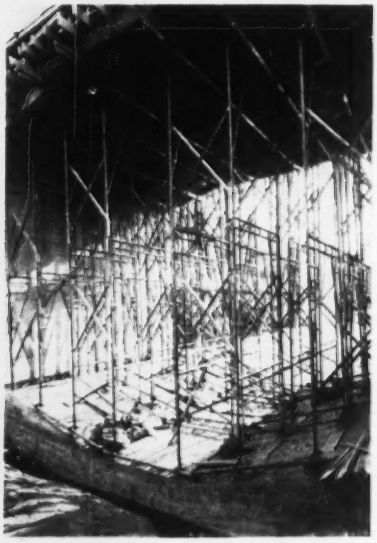
Monotube Foundation Piles

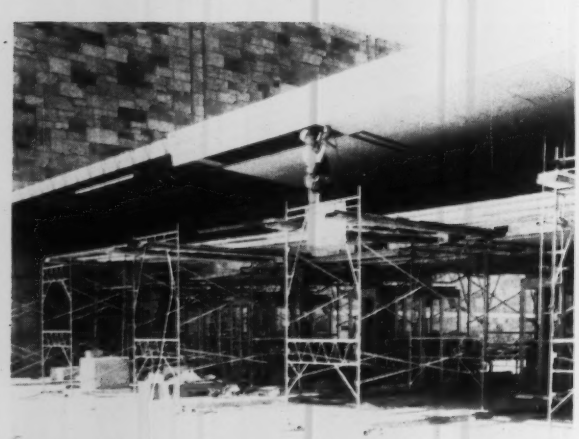


QUICK PIER BEAM SUPPORT—"Trouble Saver" 2'-wide Ladder Scaffold frames spaced 5' apart help contractor, M.D.A. Construction Co. provide easy access for forming work and support for one of 20 bridge piers on the Cross-Westchester Expressway, White Plains, N.Y. This photo shows forming and support for a pier beam 42" x 48" deep, 14' high. Many users of "Trouble Saver" Shoring say "its ease of handling means quicker job completion." Complete, accurate shoring layouts are a regular part of PS Co's engineering service available thru nation-wide offices or representatives that *sell* or *rent* "Gold Medal"® Scaffolds



CONFORMING TO CURVES—Guy F. Atkinson Co., contractor, uses "Trouble Saver" Shoring to support Pacific Electric Ry. Co. concrete bridge, Los Angeles, over a sloped concrete channel base. Adjustable legs help meet both curves, top and bottom. Note 4" steel I-beams as stringers, furnished by PS Co.

Shoring Methods . . . for Highway Construction by The Patent Scaffolding Co., Inc.



FINISHING OPERATIONS—On toll booths at the New Jersey Plaza for the New York—New Jersey Lincoln Tunnel these "Trouble Saver" fixed Scaffolds are used to provide safe, level platforms for finishing work. The scaffolding components used here are the same as those used for shoring operations. By assembling them in towers and spacing to take the load, practically any shoring job can be done.

EASILY HANDLED BRIDGE SHORING—5'-wide prefab "Trouble Saver" Sectional Steel Shoring frames are handled easily by the crew for T. M. Page and RCT Corp., joint venturers, to obtain the correct support for the Cajon Blvd. Bridge over Devil's Creek Diversion Channel, San Bernadino, Calif. Two 6'6"-high frames, with extension legs, give 14' height. 4" steel I-beams used as stringers. 3'7" spacing between frames.

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(Continued from page 86)

O. City, City Hall, Cincinnati, O. Bids Mar. 19, awarded Mar. 26. CD 3/24, under LB.

▲ **INDIANA**—State Hy. Comn., John Peters, chn., State House, Annex, Indianapolis, Bids opened 3/25.

Ind.—**Ralph Myers Cont. Co.**, Salem, Ind., LB **$1,531,915**, est. $1,748,889, (4 bidders) c. conc. 5.544 mi. Proj. F-845(8), Contr. R-4302, Posey Co.;

Ind.—**Vogel Constr. Co.**, 3760 E. St. Clair, Indianapolis, Ind., LB **$418,516**, est. $447,995, (4 bidders) c. conc. 0.964 mi. Proj. U. S.-165 (3), Contr. R-4356, Marion Co.; LB **$675,326**, est. $809,857, (6 bidders) c. conc. 1.756 mi. Proj. F-187(11), Contr. R-4357, Morgan Co.;

Ind.—**Rieth-Riley Constr.**, Goshen, Ind., LB **$1,382,431**, est. $1,536,156, (4 bidders) c. conc. 6.213 mi. Proj. F-402(8), Constr. R-4358, Wayne Co.; LB **$123,532**, est. $139,207 (2 bidders), bit. base wid'n. and resurf., Proj. F.-418, Cont. RS-4365, DeKalb Co.;

Ind.—**Feigel Constr. Co.**, 800 E. Mich., Evansville, Ind., LB **$594,670**, est. $629,691 (2 bidders) bit. 5.237 mi. Proj. S-642, Contr. R-4360, Gibson Co.;

Ind.—**Traylor Bros. Inc.**, Upper Mt. Vernon Rd., Evansville, Ind., LB **$458,357**, est. $544,610 (6 bidders) bit. pavement with concrete base and bit. base wid'n. and resurf. 11.491 mi. Proj. F-62(2), Contr. 4361, Pike and Davies Counties;

Ind.—**Brooks Constr. Co.**, 1123 Barthold, Ft. Wayne, Ind., LB **$80,672**, (4 bidders) bit. base wid'n. and resurf. and bit. resurf. 0.208 mi. Proj. ST-377, Sec. E, Contr. RS-4362, Allen Co.;

Ind.—**Phend & Brown, Inc.**, Milford, Ind., LB **$484,306**, (2 bidders) bit. pavement with concrete base, concrete base wid'n. and bit. resurf. 10.868 mi. Proj. F-158 (2), Contr. RS-4363, Jasper Co.;

Ind.—**Bituminous Materials Co.**, E. Fort Harrison Rd., Terre Haute, Ind., LB **$411,366**, est. $435,710, (5 bidders) bit. base wid'n. and resurf. and bit. pavement with concrete base 7.788 mi. Proj. F-218 (3), Contr. RS-4364, Park Co.;

Ind.—**L. P. Cavett Co.**, 511 Shepherd, Lockland, O., LB **$531,769**, est. $609,834, (7 bidders) concrete base wid'n. and bit resurf. 12,681 mi. Pron. F-19(2), Contr. RS-4366, Perry Co. CD 3-/12.

▲ **INDIANA**—State Hy. Comn., John Peters, chn., State House Annex, Indianapolis, Bids opened 3/25.

Ind.—**Robert H. King**, Danville, Ind., LB **$166,159**, est. $172,965 (1 bidder) 3 cont. steel beam spans No. 41-G-3864 over Middle Fort Creek, Proj. F-78 (22), Contr. No. 4338, Sullivan Co.; LB **$349,917**, est. $468,469 (4 bidders) 5 spans, No. 31E-A9-4134, Proj. I-03-1 (6), Contr. No. 4336, Clark Co.;

Ind.—**Canonie Constr. Co.**, South Haven, Mich., LB **$197,277**, est. $234,401 (4 bidders) 4 cont. steel beam spans No. 20-F0-40-45, Proj. F-720. Contr. No. 4330, St. Joseph Co.;

Ind.—**Paul H. Fox**, Indianapolis, Ind., LB **$121,069**, est. $163,040 (5 bidders) rein.-con. arch. Proj. F-616 (7), Cont. No. 4331, Wayne Co.;

Ind.—**Yost Constr. Co.**, Decatur, Ind., LB **$148,171**, est. $166,920 (5 bidders) 4 rein.-con. arch spans No. 28-P-4065, Proj. S-183 (2), Contr. No. 4333, Randolph Co.;

Ind.—**Bates & Rogers Constr. Co.**, 600 W. Jackson, Chicago, Ill., LB **$2,789,932**, est. $3,745,575 (9 bidders) 16 steel plate girder spans, No. 41-E-3917, Proj. F-78 (15), Contr. No. 4339, Gibson Co.;

Ind.—**Kahl & Mahon**, 402 N. Main, Liberty, Ind., LB **$164,773**, est. $180,647 (1 bidder) 3 rein.-con. girder spans No. 213-C-4071, Proj. S-174 (3). Contr. No. 4348, Tipton Co.;

Ind.—**J. C. O'Connor & Sons, Inc.**, 2104 Miner, Fort Wayne, Ind., LB **$265,417**, est. $319,267 (4 bidders) 4 rein.-con. slab spans, No. 420-C-4039, Proj. IN-265 (25), Contr. No. 4349, Lake Co.;

Ind.—**Columbus Paving Co.**, Columbus, Ind., LB **$294,193**, est. $305,966 (4 bidders) 4 con. rein.-con. girder spans No. 421-G-9-4194, Proj. I-05-3 (24), Contr. No. 4350, Shelby Co.; LB **$166,637**, est. $192,120 (6 bidders) four 40 ft. rein.-con. girder twin structure No. 67-H-3830, Proj. F-187 (15), Contr. 4343, Morgan Co.;

Ind.—**L. I. Griffin & Sons, Inc.**, 5002 S. Hanna, Fort Wayne, Ind., LB **$158,578**, est. $183,636 (4 bidders) 5 rein.-con. girder spans, No. Howard 9157, Proj. S-457 (1), Contr. No. 4353, Howard Co.;

Ind.—**R. L. Schutt Co., Inc.**, 611 N. Park Ave., Indianapolis, Ind., LB **$217,264**, est. $269,990. (8 bidders) 6 rein.-con. girder and cont. steel beam spans No. 67-H-1605J, Proj. F-187, (16), Contr. 4342, Morgan Co.; LB **$95,095**, est. $115.754, (7 bidders) 3 cont. rein.-con. slab twin structures No. 67-H-3831, Proj. F-187 (10), Contr. No. 4344, Morgan Co.; LB **$88,461**, est. $103,685, (7 bidders) four 40 ft. rein. conc. girder spans No. 144-C-3509, Proj. S-66, (2), Contr. No. 4346, Morgan Co.;

Ind.—**Wilbur C. Scheirer**, Frankfort, Ind. LB **$300,719**, est. $374,073, (4 bidders) rein.-con. girder No. 136-G-4091, Proj. F-107, Contr. 4345, Hendricks Co. CD 3/12.

▲ **INDIANA**—State Hy. Dpt., 102 Senate Ave., Indianapolis,

Gast Constr. Co., S. Columbia St., Warsaw, Ind., CA **$1,917,227**, 2 bridges and concrete paving State Rd. 30. Bids Feb. 25. CD 3/7, under LB.

MICHIGAN—State Hy. Dpt., John C. Mackie, comr., Stevens T. Mason Bldg., Lansing,

Mich.—**C. A. Hull Co.**, 1330 Northlawn, Birmingham, Mich., LB **$129,155**, concrete steel bridge over Cass River, Fort Rd. 0.64 mi. south Bridgeport in Section 21, CS B1 of 73-6-27 C1 (S 657 7), Saginaw Co., CD 3/3;

Mich.—**Jutton-Kelly Co.**, 13240 Alber, Dearborn, Mich., LB **$386,304**, concrete steel bridge over Edsel Ford Expressway on Harper Ave. near Haverhill Ave. BI B89 of 82-22-10 C1-UN (109-1-27), Wayne Co., CD 2/26.

▲ **MICHIGAN**—State Hy. Dpt., John C. Mackie, Hy. Comr., Stevens T. Mason Bldg., Lansing, Bids opened 3/19:

Mich.—**Wright Constr. Co.**, 3800 Wood, Lansing, Mich., LB **$137,617**, concrete base course widn., b. conc. surf. 3.225 mi. M-60 from Broadway east to 2.5 mi. east Cassopolis, Cass Co., CD 3/6;

Mich.—**Detroit Concrete Products Corp.**, 10 blocks west of Southfield, Detroit Mich. LB **$237,014**, concrete base course widn. 24 ft. bit. conc. surf. 9.326 mi. M-81 intermittently from west of Cass city east M-53. F 74081 C1-R (F 79062 C1-R) (F 385 7) Sanilac and Tulsco Counties;

Mich.—**Walter F. Hutfilz Co.**, 2850 Bay Rd., Saginaw, Mich., LB **$275,038**, 25 ft. aggreg. base course, grading, drainage structures 5.504 mi. M-61 from Gladwin Co. line east M 09081 C1-R, in Bay Co.;

Mich.—**Hodgkiss & Douma**, Petoskey, Mich., LB **$75,724**, 0.388 mi. grading, drainage structures, 43 ft. aggreg. base course with curb and gutters, b. conc. pavement M-88, Mancelona. M 05031 C1-U, Antrim Co.,

Mich.—**Charles J. Rogers Inc.**, 14836 Grand River, Detroit, Mich. and **Cooke Contg. Co.**, 1116 Penobscot Bldg., Detroit, Mich., LB **$389,454**, grading, drainage structures, concrete base course 9 in. uniform with b. conc. pavement 0.491 mi. Connor Ave. approaches to Edsel Ford Expressway from Evanston to Olga Ave. BI 82025 C22-UN (I 09-1 46), FAI Proj. Act 1956, Wayne Co., CD 3/3.

BUILDINGS—LB & CA

† **F. S. Cupp Constr. Co.**, Washington Court House, O., LB **$458,933** (13 bidders) THERAPEUTIC EXERCISE BLDG., Chillicothe Veterans Administration Hospital, CHILLICOTHE, O. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Mar. 25, CD 1/23.

▲ **Ray Constr. Co.**, 704 N. Northwest Hy. Park Ridge, Ill., Own forces, **$1,500,000**, five 24 unit APARTMENTS, Factory Rd. near Dryden, ARLINGTON HEIGHTS, ILL., Robert Babbin, 3744 W. North Ave., Chicago, Ill., archt.

▲ **Cheli & Anderson**, 5425 N. Kedzie Ave., Chicago, Ill., CA **$2,725,475**, 1 and 2 story, brick HIGH SCHOOL, 5835 N. Lincoln Ave., CHICAGO, ILL. Chicago Bd. Educ., 228 N. LaSalle St., Chicago, Ill. CD 6/11.

▲ **R. C. Wieboldt Co.**, 1515 Church St., Evanston, Ill., CA **$1,000,000**, 3 story brick, glass Uptown Boys CLUB and swimming pool, 944-56 Gunnison St., CHICAGO, ILL. Chicago Boys Club, 123 W. Madison St., Chicago, Ill. CD 4/3/57.

Otto A. Schulz, 3114 Harrison, Evanston, Ill., CA **$409,316**, 1 story, bsmnt. CHURCH, 2 story SCHOOL, 2 story RECTORY, Holy Guardian Angel Parish, Polk St. and Blue Island Ave., CHICAGO, ILL. Catholic Bishop of Chicago, 719 N. Wabash Ave., Chicago, Ill. CD 2/26.

John F. Chapple Co., North Ave. and Harvard, Villa Park, Ill., CA **$400,000**, FACTORY, PARKING AREA, EMPLOYEE RECREATION AREA, Lyman and Blodgett, DOWNERS GROVE, ILL. Harper-Wyman Co., 8550 S. Vincennes, Chicago, Ill.

▲ **C. A. Tharnstrom Co.**, 7401 St. Louis Ave., Skokie, Ill., CA **$1,151,959**, 134 unit APARTMENT, 800 N. Hinman Ave., EVANSTON, ILL. Hurwith, Bright & Zaltzman, 141 W. Jackson Blvd., Chicago, Ill. CD 3/18, under LB.

▲ **Olympic Suburban Estates**, 16162 Drexel Ave., South Holland, Ill., Own Forces, **$1,500,000**, 50 HOMES, OLYMPIA FIELD, ILL. Harry J. Quinn, 16162 Drexel Ave., South Holland, Ill., archt.

▲ **Pacesetter Homes, Inc.**, 16162 Drexel Ave., South Holland, Ill., Own Forces **$5,000,000**. 300 HOMES, Pacesetter Park, SOUTH HOLLAND, ILL. Harry J. Quinn, 16162 Drexel Ave., South Holland, Ill., archt.

▲ **Precour Constr. Co.**, 1117 Bowen St., Oshkosh, Wis., CA **$1,339,800**, POST OFFICE (lease purchase) GREEN BAY, WIS. General Services Admin., 19th and F Sts. N.W., Wash., D. C. Bids Mar. 4. CD 3/6, under LB.

Phelps-Wagner Builders, 731 Capitol Northeast, Battle Creek, Mich., LB **$922,200**, general contract Northwestern JUNIOR HIGH SCHOOL, BATTLE CREEK, MICH, Bd. Educ., Battle Creek, Mich. Bids Mar. 18. CD 2/18.

R. E. Dailey & Co., 21675 Telegraph Rd., Detroit, Mich., CA **$521,900**, DORMITORY, DETROIT, MICH. Marygrove College, 8425 W. McNichols, Detroit, Mich. Roger Allen & Assocs., 1126 McKay Tower, Grand Rapids 2, Mich., archts. CD 11/21.

Cunningham Limp Co., 3087 W. Grand Blvd., Detroit, Mich., CA Est. **$800,000**, 2 story, brick, steel DISTRIBUTION CENTER WAREHOUSE, 5-acre site at Oakwood Blvd. and Edsel Ford Expressway, DETROIT, MICH. B. F. Goodrich Co, 500 S. Main St., Akron, Ohio. H. E. Beyster & Assocs., Inc., 700 Griswold Bldg., Detroit, Mich., archt. CD 12/13.

WEST OF MISSISSIPPI

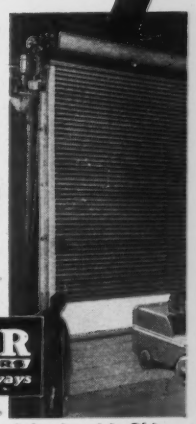
HEAVY CONSTRUCTION—BA

Mo., Chillicothe—BA 4/17—City, sewage treatment plant, separate sludge digestion type disposal plant. 1.3 m. g. daily. $444,112. J. W. Shikles & Co., 505 Reliance Bldg., Kansas City, Zone 6, engrs. CD 10/1.

▲ **Mo., St. Louis**—BA 4/29—City, Frank Kriz, pres. Bd. P. Service, 304 City Hall, 12th Blvd. and Market St., Zone 3, viaduct to carry Spring Ave. across Mill Creek Valley railroad tracks between Gratiot St. and Clark Ave. $1,310,000. F. R. Martin, Engineers, Inc., 407 N. 8th St., Zone 1, engr. CD 11/25/55.

Mo., St. Louis—PAVING—BA 4/29—City, Frank Kriz, pres. Bd. P. Service, 304 City Hall, 12th Blvd. and Market St., Zone 3, paving work adjacent to terminal

Kinnear Rolling Doors



Heavy galvanizing—*1.25 ounces of pure zinc per sq. ft. of metal, by ASTM standards*—gives Kinnear Steel Rolling Doors many extra years of carefree service life. And Kinnear's **special Paint Bond** prepares the zinc surfaces for quick, thorough, lasting paint adhesion. Insist on Kinnear Doors.

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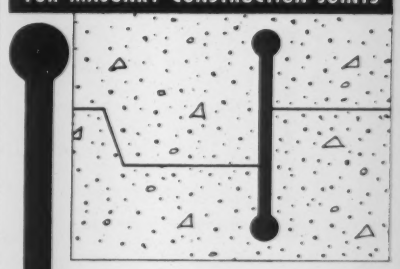
WATERSTOPS
FOR MASONRY CONSTRUCTION JOINTS



Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

See Sweet's, or Write for Information.

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bldg. Lambert-St. Louis Municipal Airport, incl. increasing size of aprons, paving addnl. holding aprons at ends of runways of by-pass taxiway and road around parking area. $678,110. CD 9/26.

Tex., Fort Worth—BA 4/29—City, c/o Thos. A. McCann, mayor, Trinity River outfall sewer $400,000. Plans deposit $15. Extended date. Freese & Nichols, 407 Danciger Bldg., engrs. CD 3/19.

▲† **Texas**—BA 4/30—U. S. Eng., 606 Santa Fe Bldg., Galveston, rectification and imprvs. to portion Brays Bayou, Almeda to Old Main and Chimney Rock Rd. to Richmond Rd., Houston, ENG-41-243-58-48. $2,500,000-$3,500,000. CD 3/20.

▲† **South Dakota**—BA On Or About 5/15—U. S. Eng., 1709 Jackson St., Omaha 2, Neb. powerhouse substructure, Oahe Reservoir Proj., near Pierre, ENG-25-066-58-107. CD 1/7, under LB.

BUILDINGS—BA

Mo., Nevada—DORMITORY, etc.—BA 4/22—Ralph McSweeney, dir. Div. P. Bldgs., State Capitol Bldg., Jefferson City, (1) storage room; warehouse and bakery; (2) dormitory bldg. at Missouri State Hospital No. 3. $500,000. Plans deposit $50. Voskamp & Slezak, 18 East 11 St., Kansas City 6, Mo., archts. CD 10/28.

▲ **Colo., Denver**—POST OFFICE—BA 5/27—U. S. Post Office Dpt., General Services Admin., 19th and F Sts. N. W., Wash., D. C., constr. 4 story, 490,000 sq. ft. Postal Annex Bldg. $8,209,000. T. H. Buell & Co., 730 14th St., archts.-engrs. CD 12/19, under LB.

Iowa, Clear Lake—SCHOOL—BA 6/16 (tentative)—Clear Lake Community Schools, Earl O. Berge, supt. Schools, 67,000 sq. ft. brick, steel high school, $800,000. Karl Keffer Assocs., 202 Masonic Bldg., Des Moines, archts. CD 3/21.

BUILDINGS—SLC

Minn., St. Paul—STORE—The Emporium Dpt. Store, 121 East Eeventh St., soon lets contract, modernization of store, incl. new facing on all five floors, etc. $700,000. Ellerbe & Co., E. 505 First Natl. Bank Bldg., archts. CD 3/14.

HEAVY CONSTRUCTION—LB & CA

† **Asbach Constr. Co.**, 1910 West County Rd. C, St. Paul, Minn., CA $910,612 (9 bidders) constr. E-W runway replacement, incl. concrete pavement at Duluth Air Force Base, ENG-21-018-58-9, DULUTH, MINN. U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Minn. Bids Mar. 18. CD 3/25, under LB.

▲ **M. J. McGough Co.**, 1954 University Ave., St. Paul, Minn., LB $1,297,000 (7 bidders), purification and filtration plant addn., ST. PAUL, MINN. City, O. P. Simon, Jr., purch. agt., 253 City Hall, St. Paul, Minn. Bids Mar. 25. CD 3/10.

▲† **George L. Cousins Contg. Co.**, 875 N. Skinker Blvd., St. Louis 5, Mo. LB $1,014,727, est. $1,352,130 (7 bidders), floodwall and closure structure Cape Girardeau Flood Protection Proj. Item III-A 91 at Cape Girardeau, ENG-23-065-58-32, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Russell & Axon, 408 Olive St., St. Louis 2, Mo., consult. engrs. Bids Mar. 21. CD 3/11.

Sachs Electric Corp., 5540 W. Park St., St. Louis 10, Mo. LB $647,500, est. $763,916 (5 bidders) installing mercury vapor lighting, incl. 30 ft. standards and underground conduit on Kings Hy. and new traffic relief section Hall St. east of Broadway, ST. LOUIS, MO. City, Frank Kriz, pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., St. Louis 3, Mo. Bids Mar. 25. CD 2/27.

† **J. A. Bass Co.**, 332 Sexton Bldg., Minneapolis, Minn. LB $833,300, LB Schedule 1 $635,630, Schedule 2 (excluding officers quarters) $635,630 (8 bidders) constr. service bldgs. (a) headquarters group air base, 2 story addn. to existing bldg. (b) headquarters squadron (ABC) 2 bldgs. (c) storage base demin. water-masonry and steel, 1,400 sq. ft. floor area (d) storage ammo air defense, poured reinforced concrete, 5,600 ft. street area, etc., Minot Air Force Base, FY-58, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 20. CD 3/12.

TEXAS—State Hy. Comn., Austin,

J. M. Dellinger, Inc. & H. W. Larson, P.O. Box 4227, Corpus Christi, Tex. CA $958,020, flex. base and 2 course surf. treatment 10.333 mi. Hy. IH 35, Proj. I 165 (17) Webb Co. Bids Mar. 18, awarded Mar. 28. CD 2/26.

▲ **Moorman, DeWitt & Singleton**, Wills Point, Tex. CA $1,142,830, est. $1,200,000, constr. Champion Creek Dam on Champion Creek near Colorado City, TEXAS. Texas Electric Service Co., J. B. Thomas, pres.-genl mgr., Electric Bldg., Fort Worth, Tex. Bids Mar. 7, awarded Mar. 27. CD 3/11, under LB.

▲ **MONTANA**—State Hy. Comn., Helena,

Mont.—**Albert Lalonde Co.**, Sidney, Mont. CA $805,257 grade aggreg. surf. plant mix surf. build 118 ft. concrete bridge over Mission Creek on 7.75 mi. Livingston-Big Timber section of U. S. 10 (Interstate Hy. Sys.) Park Co. CA $483,939, aggreg. surf. plant mix oil 9.03 mi. Wolf Point-Poplar Rd., Roosevelt Co.;

Mont.—**J. F. England's Sons, Inc. and Robert A. Millard**, S. of City, Rapid City, S. D. CA $437,338, aggreg. surf. bit. surf. treatment on 12.66 mi. Armeless Creek-Hays-Harlem Rd., Blaine Co.;

Mont.—**Union Constr. Co., Inc.**, Missoula, Mont. CA $79,395, aggreg. surf. bit. surf. treatment 3.986 mi. East Helena North rd. Lewis and Clark Co.;

Mont.—**Kiely Constr. Co.**, E of Butte, Butte, Mont. CA $458,842 aggreg. surf. bit. surf. treatment 8.8 mi. Clasoil Jct. Canyon Ferry Dam Rd.- Jefferson and Lewis & Clark County;

Mont.—**F & S Contg. Co.**, 1300 Chicago St., Butte, Mont. CA $918,344 aggreg. surf. bit. surf. treatment small drainage structures 4.99 mi. Nonida Lima Section of U. S. 91 (Interstate Hy. sys.) Beaverhead Co. Grand total $3,183,115. Bids Mar. 27. CD 3/10.

▲ **MONTANA**—State Hy. Comn., Helena,

Mont.—**F & S Contg. Co.**, 1300 Chicago St., Butte, Mont. CA $527,230, 7.57 mi. Upper Nine Mi. Rd. as bypass from U. S. 91 to U. S. 10 beginning at Butte and extedn. SE Silver Bow Co.;

Mont.—**W. R. Cahoon Constr. Co.**, 3208 Pie Line Rd. Pocatello, Idaho. CA $213,007, 118 ft. prestressed concrete hy. overpass over Lima Interchange and 450 ft. steel, concrete hy. overpass over Union Pacific R.R. tracks, Lima, Beaverhead Co. Bids Mar. 27. CD 3/10.

▲† **N. Mortensen & Co., Inc.**, 1021 Westlake Ave., North Seattle, Wash., LB $1,205,750, est. $1,358,106 (3 bidders) 67-family housing, Glasgow Air Force Base, ENG-45-164-58-27, GLASGOW, MONT. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Mar. 26. CD 2/19.

BUILDINGS—LB & CA

J. E. Hathman Constr. Co., Hathman Bldg., Columbia, Mo., CA $697,900, general contract 3 story, ground floor, 156 x 230 ft., brick, limestone, steel, concrete, etc. BUSINESS and PUBLIC ADMINISTRATION BLDG., COLUMBIA, MO. Curators of University of Missouri, Dale O. Bowling, bus. mgr., 116 Jesse Hall, Columbia, Mo. Bids Mar. 19. CD 3/24, under LB.

Huffman Bros., Steele, Mo., LB $613,342, 2 story, brick, masonry blocks, stone, steel, concrete, etc. PHYSICAL HEALTH EDUCATION and GYMNASIUM BLDG. with facilities for seating 1,900 spectators, JEFFERSON CITY, MO. Lincoln University, Bd. Curators, Jefferson City, Mo. Bids Mar. 20. CD 2/25.

Buckley Constr. Co., 4605 Gravois Ave., St. Louis 16, Mo., CA $581,309, general contract 3 story, brick, masonry, blocks, steel, concrete ELECTRICAL ENGINEERING BLDG. for Missouri School of Mines & Metallurgy, ROLLA, MO. Curators of University of Missouri, Dale O. Bowling, bus. mgr., 116 Jesse Hall, Columbia, Mo. Bids Mar. 20, awarded Mar. 24. CD 3/25.

Kloster Co., 4607 Beck Ave., St. Louis 16, Mo., CA $659,700 general contract with alternates 8, 10 and 11, 2 story, ground floor DORMITORY WINGS, 4 story ADMINISTRATION BLDG., etc. for Missouri School for Blind, ST. LOUIS, MO. State Bd. Educ., Hubert Wheeler, comr. Educ., Jefferson City, Mo. Bids Mar. 18. CD 3/27, under LB.

▲ **H. G. Weller Constr. Co., Inc.**, 1316 S. Mosley, Wichita, Kan., CA $1,195,100, general contract SENIOR HIGH SCHOOL, DERBY, KAN. Derby Public Schools, Bd. Educ., Paul B. Cooper, supt. Schools, Derby, Kan. Bids Mar. 6. CD 2/19.

▲ **Texas Eastman Co.**, Longview, Tex. Owner Builds. approx. $6,500,000. addnl. PLANT EXPANSION

(Continued on page 93)

A PLAN FOR THE FUTURE WE HAVE A PART IN TODAY!

PROJECT STATISTICS

Exhibits Section:	**1,600,000 sq. ft.**
4 exhibit areas	100,000 sq. ft.
Storage space	90,000 sq. ft.
Banquet room	3,000 to 5,000 capacity
Arena Section:	**315 ft. dia. x 100 ft. high**
Seating	14,000 capacity
Over-all parking	2,850 spaces
Available floor space	51 acres

Project covers 17 acres of land

A.S.T.M. A325-55T*

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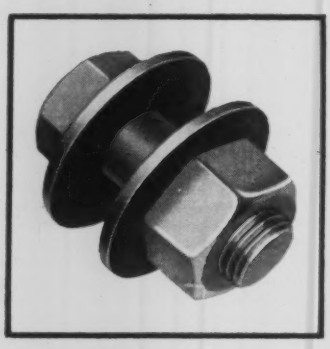
when you need them!



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*Hardness of 68 to 75 Rockwell A, and carburized to a minimum depth of .015". Quenched and tempered (non-carburized) washers have a hardness of 35 to 45 Rockwell C.

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WHITEHEAD

Typical finished bridge over dual highway.

How to save $12,000,000 in designing highway bridges

. . . ILLINOIS TOLL HIGHWAY COMMISSION SETS AN IMPRESSIVE "PRESTRESSED" EXAMPLE

The following quotations are taken from a paper, "Prestressed Concrete Bridges for the Illinois Toll Highway," presented at the recent World Conference on Prestressed Concrete by M. E. Bender of Joseph H. Knoerle and Associates, Inc., Baltimore, Md., designers of the bridges.

"Of a total of 289 bridges on the entire project, the superstructures of 224 are carried wholly or in part by prestressed concrete stringers with varying spans up to 107 feet.

"Approximately 448,000 lineal feet of prestressed stringers were required . . .

"A little over 50,000 lineal feet of 36 in. diameter cylindrical prestressed concrete piles will be placed for piers in 90 structures.

". . . estimates of the entire project show that about 45,000 tons of structural steel members were replaced by prestressed concrete at a saving of approximately $4,000,000 over report estimates, and nearly $12,000,000 over steel at prevailing prices.

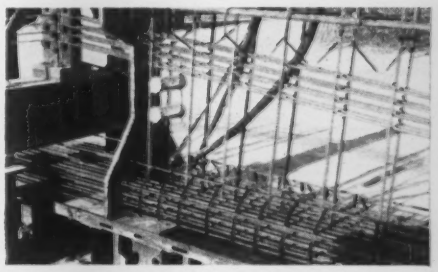
"Comparatively recent improvements in manufacturing . . . were factors in the selection of prestressed concrete members . . . Through these developments it has been possible to hold the cost of prestressed members at reasonable prices in spite of general rises in material prices."

Roebling, right from the beginning, has been active in the research and application of the prestressed principle. Constantly, with the tremendous benefits of prestressed in all kinds of structures becoming more widely known, its acceptance as a structural method is becoming equally widely applied. We will be pleased to discuss with you – and furnish you with literature on – all phases of the prestressed method. An inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will bring a prompt reply.

ROEBLING

Branch Offices in Principal Cities • Subsidiary of The Colorado Fuel and Iron Corporation

Over-all picture of Material Service Corporation casting bed at Algonquin, Illinois. Shows three rows of prestressed girders for Illinois Toll Highway under different stages of construction. Two additional firms that produced prestressed girders are: Lewistown Midwest Division, American-Marietta Company, La Grange, Illinois; and Midwest Prestressed Concrete Company, Rochelle, Illinois.



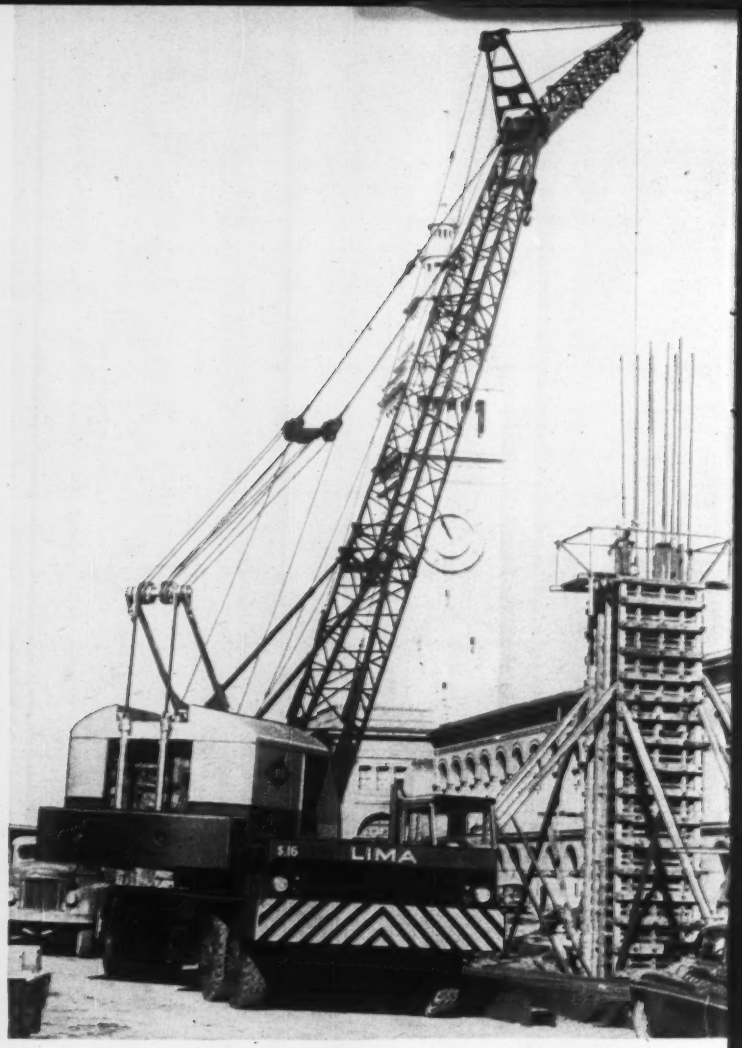
Consumers Company casting yard at McCook, Illinois, showing details at end of girder during placing of reinforcing steel. Note group of 12 strands sloping up to top of web. These strands are deflected to a point near the bottom of the beam at the third-points of span. The two "tin cans" core holes in the web for transverse steel. Six loops of 7-wire strand provide a lifting hook. The flat bands around the lower group of strands were easier to assemble than reinforcing bars.

LIMA

NEW

LIMA TYPE 84-T TRUCK CRANE

has high capacity, low weight



LIMA's new 4-axle truck crane, Type 84-T, of 70-ton capacity, sets a new standard in the industry. High-strength T-1 steel is used throughout in the truck chassis and components for greater strength with less weight.

The truck chassis consists of two full box section members, joined by seven cross members. Special features include easily removable pin-on-type front and rear outrigger boxes; roller mounted outrigger beams; full length combination deck-fender design; large, full vision operator's cab; frame-width engine compartment; hydraulic steering on all four front wheels. Working weight of the Type 84-T is 121,000 lbs. Minimum stripped weight for highway travel, 85,660 lbs.

The compact rotating unit is designed for heavy-duty service. All motions are air-controlled. Deck gears and reversing bevel gears are enclosed and pump-lubricated. Other LIMA Type 84-T features are: oversize brakes and clutches, liberal use of anti-friction bearings on all main shafts and cable drums, large two-shoe type swing clutches, dual boom hoist drums, power-raised and lowered high telescopic type gantry which reduces travel height to 13'-8", one-piece rear counterweight easily removed to meet highway limitations and torque converter power take-off.

For further information, see your nearby LIMA distributor; or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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(Continued from page 90)

FACILITIES, LABORATORIES, OFFICE, etc., LONGVIEW, TEX. CD 12/30.

F. R. Orr Constr. Co., 4414 Vine, Denver, Colo., LB $930,161, 1 story, 83,000 sq. ft. Jefferson HIGH SCHOOL, EDGEWATER, COLO. School Dist. No. R-1, 1580 Yarrow St., Lakewood, Colo. Marshall & Johnson, 280 S. Pennsylvania, Denver, Colo., archts. Wheeler & Lewis, 2215 W. 32nd St., Denver, Colo. engrs. Bids Mar. 25. CD 3/4.

† J. W. Bateson Constr. Co., Inc., Box 13307, Walnut Hill Station, Dallas, Tex., CA $676,531, 5 permanent masonry and permanent prefabricated metal bldgs. with storage magazine area," White Sands Proving Ground, ENG-29-005-58-14, LAS CRUCES, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Mar. 4. CD 3/18, under LB.

FAR WEST

BUILDINGS—BA

▲ Calif., Los Angeles—LIFE SCIENCE GRADUATE INSTRUCTION, etc.—BA 5/2—University of California, 405 Hilgard Ave., Life Science Graduate Instruction and Research Unit No. 1 at University of California at Los Angeles. $1,250,000. CD 8/9/55.

▲ Calif., Los Angeles—ADMINISTRATIVE FACILITIES—BA 5/21—Bd. Supervs. Los Angeles Co., Hall of Records, constr. road dpt. administrative facilities, 1540 Henry St. $3,411,545. CD 4/16/56.

HEAVY CONSTRUCTION—LB & CA

▲ UTAH—State Rd. Comn., State Capitol, Salt Lake City, Bids opened 3/25,

Utah—Schmidt Constr., Arvada, Colo. LB $1,707,540 est. $2,082,207 1st contract 3½ in. plant mix bit. surf. for 5.529 mi. Interstate Hy. 15, FAP Proj. No. I-01-1 (2) Washington Co.;

Utah—L. A. Young Constr. and Vernal Sand & Gravel, Richfield, Utah. LB $142,909, est. $140,982, 2nd contract 2½ in. road mix bit. surf. for 3.723 mi. State Rd. 208, FAPS No. S-0184 (1) Duchesne Co.;

Utah—LeGrand Johnson Constr., Logan, Utah. LB $216,869, 3 in. road mix bit. surf. for 8.523 mi. State Rd. No. 42 (U. S. 30-S) FASP No. S-0526 (10) Box Elder Co.;

Utah—Sumsion & Sons Constr., Springville, Utah. LB $174,454, est. $192,142 2 in. road mix bit. surf. for 8.884 mi. State Rd. 262 FASP No. S-0406 (2) San Juan Co. CD 3/19.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 3/27,

Clifford C. Bong, 123 N. 3 Ave., Arcadia, Calif. LB $1,611,881, est. $2,160,000 (11 bidders) constr. 5 mi. 2 lane hy. between Chisanahoo Creek and 0.4 mi. east of Santa Ana Creek for relocation of State Sign Rte. 150 near Ojai, incl. 131 ft. rein.-con. bridge over Coyote Creek, V11-Ven-151-C. CD 2/26.

▲† A. Teichert & Son, Inc., Box 397, Baldwin Park, Calif., LB $1,198,940 (9 bidders) imprv. Santa Anita Wash Channel from Atchison Topeka Santa Fe R.R. to Rio Hondo Channel, ENG-04-353-58-15, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 27. CD 3/4.

▲† Fredericksen, Kassler & Stolte, Inc., 5467 San Fernando Rd., Los Angeles, Calif., LB $4,373,874 (12 bidders) airfield pavement at Cooke Air Force Base, ENG-04-353-58-38, LOMPOC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 28. CD 3/25.

▲† N. P. Van Valkenburg, 1627 North Chico Ave., El Monte, Calif. LB $1,031,844, est. $1,500,000 (14 bidders) rehabilitation, Phase 3, FY 58, Cooke Air Force Base, ENG-04-353-58-52, LOMPOC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 27. CD 3/4.

▲ L. E. Dixon Co., 409 S. California St., San Gabriel, Calif., CA $5,107,200, constr. sports arena at Exposition Park, LOS ANGELES, CALIF. Los Angeles Memorial Coliseum Comn., 3911 S. Figueroa St., Los Angeles, Calif. Bids Mar. 12, awarded Mar. 21. CD 3/14, under LB.

▲ Norco Constr. Co., 21123 S. Norwalk Blvd., Artesia, Calif. LB $1,474,246, est. $1,573,687 (5 bidders) constr. Fullerton Creek Channel, Part 2, from Knott to Highland Aves., Buena Park area, SANTA, ANA, CALIF. Orange County Flood Control Dist., 600 N. Broadway, Santa Ana, Calif. Bids Mar. 26. CD 2/25.

BUILDINGS—LB & CA

▲ Hercules Powder Co., Chemical Propulsion Div., Delaware Trust Bldg., Wilmington 99, Del., Owner Builds. PLANT to develop and produce solid propellants for rockets and missiles. BACCHUS, UTAH. CD 7/15/55.

▲ Johnson Constr., 1725 Chicago, Salt Lake City, Utah. CA $1,515,000, HIGH SCHOOL, PRICE, UTAH. Carbon County School Dist., Price, Utah. Bids Mar. 17. CD 2/26.

▲† John P. Hopkins Co., Mercer Island, Wash. CA $1,025,000, Phase 1, constr. work for PLUTONIUM RECYCLE TEST REACTOR at Hanford Works, RICHLAND, WASH. Atomic Energy Comn., Hanford Operations Office, P. O. Box 550, Richland, Wash. Bids Mar. 20. CD 3/27, under LB.

▲ Burl Johnson & Assocs., 5407 20 Ave. N.W., Seattle, Wash., CA $3,899,105, 250 unit Capehart HOUSING, SPOKANE, WASH. Base Procurement Office, Fairchild Air Force Base, Spokane, Wash. Bids Feb. 11. CD 2/14, under LB.

▲ Beckner Constr. Co., 2650 River Ave., South San Gabriel, Calif., LB $1,380,000, constr. Bellflower HIGH SCHOOL, Bellflower St., BELLFLOWER, CALIF.

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Bellflower Unif. School Dist., 16703 S. Clark Ave., Bellflower, Calif. Bids Mar. 28. CD 3/13.

▲ **Williams & Burrows,** 500 Harbor Blvd., Belmont, Calif. CA **$2,906,190,** general constr. 65,000 sq. ft. rein.-con. ground and 1st floor exten., 25,000 sq. ft. addn. of 5, 6, 7 and 8th floors, HOSPITAL addn. at Peninsula Hospital, BURLINGAME, CALIF. Peninsula Hospital Dist. Bd. Dirs., 1738 El Camino Real, Burlingame, Calif. CD 3/14/57.

▲ **Trepte Constr. Co., Inc.,** P. O. Box 1231, San Diego 12, Calif. LB **$1,762,000** (6 bidders) general contract 3 story 2 bsmnts., about 105,000 sq. ft. floor area SCIENCE BLDG. addn., W. O. 3719GC-58, SAN DIEGO, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids Mar. 26. CD 3/17.

▲ **Cahill Brothers,** 350 Sansome, San Francisco, Calif., CA **$10,097,000** (9 bidders) 5 story HOTEL and 9 story OFFICE BLDG., rein.-con. constr., SAN FRANCISCO, CALIF. Jack Tarr Hotel, Charles A. Sammons, 6 St. and Boulevard, Galveston, Tex. Bids Mar. 20. CD 2/27.

CANADA

BUILDINGS—BA

▲ **Ont., Petawawa** — HOUSING — BA 4/17 — Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, 215 unit-row housing, 11 single dwellings and all services. $2,000,000.

▲ **Ont., Hamilton**—CITY HALL—BA 4/30—City, City Hall, constr. City Hall, incl. 10,000 sq. ft. city chamber; 5,000 sq. ft. penthouse, 12,000 sq. ft. basement area, 22,000 garage area, $4,700,000. Plans deposit $500. Stanley Roscoe, City Hall, city archt. Fleury, Arthur & Barclay 85A Bedford Rd., Toronto, consult. archts., C. C. Parker & Assocs. Ltd., 795 Main St. W., engrs. CD 2/21/56.

▲ **Ont., Toronto** — ADMINISTRATION — BA 4/30 — Ontario Dpt. Hys., Parliament Bldgs., 1 and 2 story, 300 x 600 ft. on one level, 300 x 300 ft. on lower grade, structural steel frame, masonry walls, aluminum sash, steel roof deck Administration bldg., Downsview, $2,000,000. Plans deposit $100. Mathers & Haldenby, 10th St. Mary St., archts. C. D. Carruthers & Wallace, Consultants Ltd., 92 Yorkville Ave., engrs.

HEAVY CONSTRUCTION—LB & CA

BRITISH COLUMBIA—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont.

Thode Constr. Ltd., 7th St. & Emerson Ave., Saskatoon, Sask., LB **$515,750** (9 bidders) bit. stabilized base course, Yoho National Park, Mile 12 to Mile 28.4, Trans-Canada Hy. Field. Bids Mar. 25, CD 3/3

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,

Sterling Constr. Co. Ltd., 2494 Riverside Dr. E., Windsor, Ont., CA **$829,226** (11 bidders) gran. base and hot mix paving 10.3 mi. Ny. 98, from Merlin to Tilbury, Contr. 57-605, Merlin. Bids Mar. 12, awarded Mar. 28. CD 2/14.

Shore & Horwitz Constr. Co. Ltd., Box 527, Station "B", Ottawa, Ont., CA **$594,935,** constr. Laboratory Wing to High Speed Laboratory at Defence Research Board, Uplands Air Force Base, OTTAWA, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Awarded Mar. 19. CD 3/7, under LB.

J. D. Stirling Ltd., 940 Cote de Liesse Rd., Montreal, Que., CA **$834,524,** tunnel under Canadian Pacific Railway tracks at Masson St. between Iberville and Delorimier Aves., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids Feb. 17, awarded Mar. 21. CD 3/4.

BUILDINGS—LB & CA

▲ **Montclair Constr. Co. Ltd.,** 5515 Western Ave., Montreal, Que., CA **$1,850,000,** 187 HOUSING units with related services, P. M. Q. area, at Army Camp, CAMP GAGETOWN, N. B. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Wiggs, Lawton & Walker, 4350 Sherbrooke St. W., Montreal, Que., archts. Wiggs, Walford, Frost and Lindsay, 4350 Sherbrooke St. W., Montreal, Que., engrs. Bids Mar. 20, awarded Mar. 25, CD 3/6.

▲ **Gateway Development Co.,** S. Syndicate Ave., Fort William, Ont. Owner Builds. **$1,000,000,** 75 HOUSES in Green Acres area, FORT WILLIAM, ONT.

▲ **Pigott Constr. Co. Ltd.,** Pigott Bldg., Hamilton, Ont., CA **$2,200,000,** 2 story bsmnt., 200-bed, rein.-con. frame, brick, tile HOME FOR AGED plus 50-bed HOSPITAL extension GUELPH, ONT. Sisters of St. Joseph, St. Joseph's Hospital, 80 Westmount Rd., Guelph, Ont. Marani & Morris, 1250 Bay St., Toronto, Ont., archt with struct. engineering. Karel Rybka & Assocs., Ltd., 209 Davenport Rd., Toronto, Ont. mech. engrs. Awarded Mar. 21.

Con-Eng. Contractors Ltd., 267 Dundas St., London, Ont., CA **$624,510** (18 bidders) 1 story, small bsmnt., 201x501 ft., structural steel frame, concrete block walls, concrete fdn. on piles, WAREHOUSE, LONDON, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Awarded Mar. 24. CD 3/13/54.

▲ **Perkell Constr. Co. Ltd.,** 534 Lawrence Ave. W., Toronto, Ont. Owner Builds. **$1,280,000,** 3 story, bsmnt., 50x226 ft. 40 suites each, 4 APARTMENTS, Don Mills Rd., TORONTO, ONT. Harry B. Kohl, 1407 Yonge St., Toronto, Ont., archts.

Russell Constr. Ltd., 504 Harbor Commission Bldg., Toronto, Ont., CA **$727,727** (9 bidders) SCHOOL addns., alterations, Ryerson Public School, 677 Dundas St. W., TORONTO, ONT. Toronto Bd. Educ., 155 College St., Toronto, Ont. Bids Mar. 14, awarded Mar. 20. CD 3/19, under LB.

(Continued on page 97)

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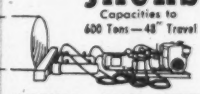

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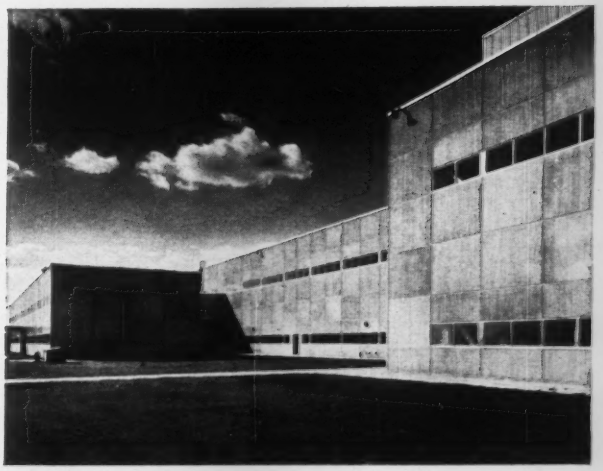

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(Continued from page 94)

Louis Donolo, Inc., 8320 St. Lawrence Blvd., Montreal, Que., CA $760,000 (8 bidders) 128 unit, 2 story, bsmnt., brick veneer constr. asphalt shingle roofing, 12 various type APARTMENTS, CHATEAGUAY, QUE. Quebec Legion Memorial Housing Corp., c/o Archibald, Illsley & Templeton, archts., 1440 St. Catherine St. W., Montreal, Que. Bids Mar. 14, awarded Mar. 21. CD 3/10.

Duroc Constr., Inc., 5126 Park Ave., Montreal, Que., LB $516,000, CLUB extension, 257 Sherbrooke St. E., MONTREAL, QUE. Club St. Denis, 257 Sherbrooke St. E., Montreal, Que. Bids Mar. 11. CD 3/10.

▲ **Foundation Co. of Canada Ltd.**, 1900 Cherbrooke St. W., Montreal, CA $60,000,000, constr. OFFICE BLDG. DEVELOPMENT, 40 story steel glass to rise 500 ft. in shape of a cross, plaza, sub-surface parking garage constitute first phase of proj., Place Ville Marie Project, downtown MONTREAL, QUE. Webb & Knapp (Canada) Ltd., 1010 St. Catherine St. W., Montreal, Que. Awarded Mar. 26, CD 11/29.

Nordic Development Corp., 3654 St. Lawrence Bldg., Montreal, Que., Owner Builds, $400,000, 3 story bsmnt., 128-suites, brick walls, APARTMENT, concrete fdn., MONTREAL, QUE.

▲ **Iberville Constr., Inc.**, 44 Port Royal Ave., Montreal, Que. Owner Builds. $5,000,000, HOUSING extension, 275 concrete, brick bungalows, Notre Dame St., REPENTIGNY, QUE.

PROPOSED PROJECTS

WATER SUPPLY

▲ **N. C., Greensboro**—City, City Hall, voted $6,200,000 bonds, Mar. 18, incl. raising Lake Brandt Dam, $1,650,000; water feeder mains, $1,300,000; two storage tanks, $400,000; distribution lines, $1,150,000. CD 3/9/56.

▲ **Wash., Auburn**—Water Dist. No. 100, voted bonds Mar. 11, extend Lake Center water sys. $1,750,000.

Utah, Kearns—Town Council, Kearns, voted bonds Mar. 15, imprv. water and sewerage facilities. $950,000. Templeton & Linke, 500 Dooly Bldg., Salt Lake City, consult. engrs. CD 2/20.

SEWERS, WASTE DISPOSAL

▲ **Calif., Palm Springs**—City, City Hall, $1,550,000 bond election Apr. 29, addns. to sanitary collections, treatment and disposal sys.

Conn., Darien—Town, Selectmen, Town Hall, constr. sewers, Post Rd. and adjacent streets from Dubois St. to Stamford Town Line, 2 pumping stations, Norton area, $885,000. CD 8/29/56.

Post Rd. from road to Norwalk Town Line, Richmond Drive area, pumping station, $210,000.

sewers, Hoyt St. from Miller Rd. to Wakeman St.; Lynn Court, Ecko Drive and Lake Drive, $385,000.

sewers, Holly Lane, Waldron Rd., Revere Rd., Peterick Rd., portion of Old Parish Rd., etc., $320,000.

trunk line sewer for High School site on Lenssen tract, $150,000.

Conn., Stratford—Town, Town Hall, 50-ton daily capacity incinerator. $750,000. Bowe, Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs-archts.

▲ **Fla., Winter Haven**—City, City Hall, exten. sewage collection system and addns. to sewage treatment plant. $1,000,000; A. P. & R. K. Michaels, 3025 E. South St., Orlando, consult. engrs.

Ky., Louisville—Metropolitan Sewer Dist., 412 W. Market St., sanitary sewers for Auburndale-Kenwood Area. $700,000. Metcalfe & Eddy, Statler Bldg., Boston 16, Mass., consult. engrs. Bids late summer. CD 12/28/56.

Md., Rockville—City, Court House, Rockville, street and interceptor sewers, force mains and pumping stations in Watts Branch Drainage Area. $979,100. Gilbert Assoc., 525 Lancaster Ave., Reading, Pa., engrs.

▲ **Mich., Wyandotte**—Taylor Twp., voted $3,000,000 bonds sewerage sys. CD 5/10/54.

Mo., Webb City—City, D. W. Smith, clk., City Hall, sewer imprv. northeastern and northwestern sections of city, incl. new lines and repairs to existing lines, disposal plant, lift station, etc. $692,000. Malcolm A. Miller & Assocs., 2110 West 75 St., Prairie Village 15, Kan., consult. engrs. CD 127.

▲ **N. C., Greensboro**—City, City Hall, voted bonds, $5,800,000 bonds. incl. imprv. North Buffalo Disposal Plant, $4,300,000; sewer collection and out fall lines, $1,500,000.

STREETS AND ROADS

N. J., Morristown—Bd. Freeholders Morris Co., Court House, imprv. Blue Mill Rd. (New Vernon); Speedwell Ave. to Rte. 202, Morris Plains; Rte. 202 in Boonton; Mount Arlington Blvd., Mount Arlington, $528,000. Robert L. Curtis, Court House, Morristown, owner's engr. CD 12/20.

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
Erie Co.—4 lane limited access highway, Sandusky bypass, relocation of Routes 6 & 2, from Huron to Venice. $12,700,000. Sanzenbacher, Miller & Brigham, 3023 Sylvania St., Toledo, consult. engrs. CD 5/3/56.

▲ **OHIO**—State Hy. Dpt., Columbus,
Stark, Tuscarawas, Guernsey, Noble and Washington Counties—imprv. Route No. U.S. 21 from Canton to Marietta, $115,000,000. J. E. Greiner Co., 1106 N. Charles St., Baltimore, Md., consult. engrs. on section from Canton to US 40. Howard, Needles, Tammen & Bergendoff, 1805 Grand St., Kansas City, Mo., consult. engrs, on section from U.S. 40 to Marietta.

EARTHWORK, WATERWAYS

▲† **Utah**—Soil Conservation Service, Dpt. Agriculture, 222 S. Temple, Salt Lake City, proj. includes some 4 flood prevention and sediment dam and 1 irrigation storage reservoir, American Fork-Dry Creek Proj. Utah Co. $1,000,000. Bids early 1959.

▲† **Alaska, Sitka**—U. S. Eng., Anchorage, small-boat harbor. $1,125,000.

AIRPORTS

▲ **N. Y., Albany**—AIRPORT IMPRVS.—Albany Municipal Airport, Zone 1, aprons, roads, parking areas, sewerage sys. at terminal, municipal airport, Colonie. $1,500,000. Parsons, Brinckerhoff, Hall & Mcdonald, 51 Broadway, New York, Zone 6, consult. engrs. CD 7/31/52.

▲ **O., Columbus**—AIRPORT IMPRVS.—City, City Hall, runways at Port Columbus Airport, $2,100,000. J. E. Greiner Co., 1106 W. Charles St., Baltimore, Md., consult. engr. CD 3/7.

▲ **Pa., Harrisburg**—AIRPORT IMPRVS.—Pa. Aeronautics Comn., Harrisburg State Airport, R.D. 1, New Cumbmerland, exten. runways and terminal addns. Harrisburg State Airport. $1,000,000 CAA-approved.

▲ **Tex., San Antonio**—AIRPORT IMPRVS.—City, City Hall, plans by Atlee B. & Rob. M. Ayres, 342 W. Woodlawn, airport imprvs. $1,000,000. Bids soon. CD 9/9/52.

AMERICANS ABROAD

▲† **Austrailia, Melbourne**—PLANT—Godfrey L. Cabot, Inc., 77 Franklin St., Boston 10, Mass., U.S.A. and United Carbon Co., Box 1913, Charlotte, N. C., U.S.A., plans carbon black plant, near here. $4,400,000.

PUBLIC BUILDINGS

▲ **Calif., Bakersfield**—SCHOOL—Kern County Union High School and Junior College Dist., 2000-24th St., $9,000,000 bond election May 6, school constr. CD 2/6/53.

Calif., Los Angeles—POLICE BARRACKS—Los Angeles Bd. P. Wks., 153 City Hall, plans by Van Dyke & Barnes, archts.-consult. engrs., 2234 Beverly Blvd., barracks at Police Rehabilitation Center near Saugus. $625,500.

▲ **Calif., Redwood City**—HIGH SCHOOL—Sequoia Union High School Dist., c/o Supt., 480 James St., high school, incl. gym and swimming pool. $3,448,009. CD 10/24.

(Continued on page 100)

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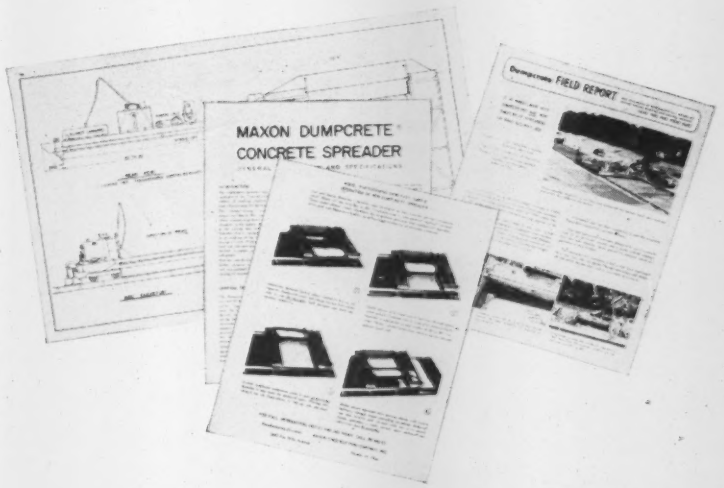

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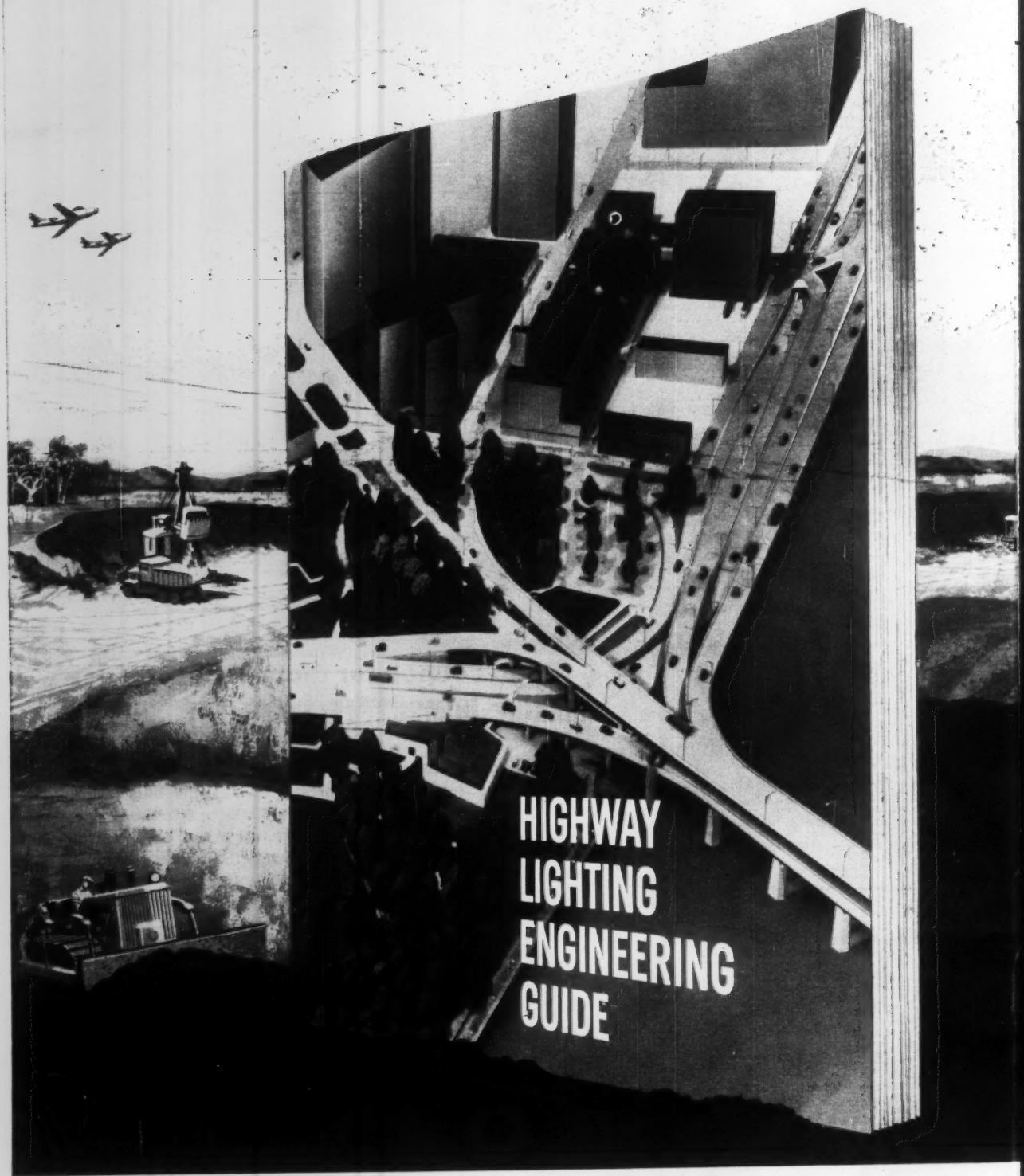

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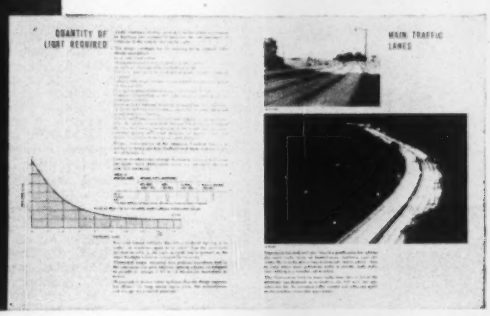
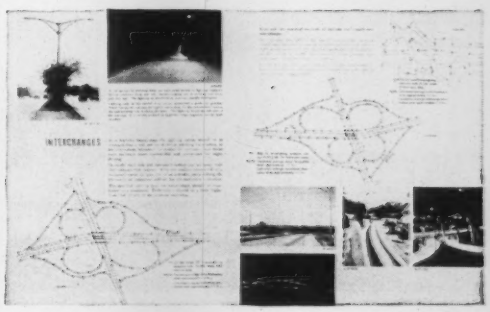




(Continued from page 97)

▲ **Calif., Salinas**—HOSPITAL—Salinas Valley Memorial Hospital, Bd. Directors, Salinas, bond election May 13 to complete 6th and 7th floors of Salinas Valley Memorial Hospital. $1,500,000. CD 10/2/51.

▲ **Calif., San Bernardino**—OFFICE—State Div. Architecture, 1120 N. St., Sacramento, addn. to division of hys. distr. office bldg. $1,700,000. J. E. Silver, 9321 W. Pico Blvd., Los Angeles, Calif. consult. engr. CD 1/9.

Calif., San Mateo—CITY HALL—City, City Hall, (city offices, police station, municipal courts). $823,500.

▲ **Calif., Sausalito**—HOUSING UNITS—Marin County Housing Auth., c/o Dir., Marin City, Sausalito, plans by Aaron Green & John Carl Warnecke, 111 New Montgomery St., San Francisco, 8 bldgs., 300 rein.-con. low rent housing units at Marin City, near here. $4,500,000. Bids about June.

Conn., Bethel—SCHOOL—Town, Town Hall, plans by William W. Sunderland, 81 West St., Danbury, high school addn., Durant Ave., $585,000. Hill & Harrigan, 909 Whalley Ave., New Haven, consult. engrs. John Cassidy, 3142 Fairfield Ave., Bridgeport, owners staff engr. CD 2/13.

Conn., Danbury—MUSIC and ARTS, etc.—State P. Wks. Dpt., 165 Capitol Ave., Hartford, Music & Arts Bldg. addn., $510,048, plant maintenance bldg., $165,600. Danbury State Teachers' College,

▲ **Conn., East Hartford**—SCHOOL—Town, Town Hall, plans by Russell F. Hills, 161 Washington St., Hartford, South-End Junior-Senior High School, Forbes St. $3,000,000. John P. Legnos Assocs., 30 Gillett St., Hartford, consult. engrs. CD 3/25.

▲ **Conn., Hartford**—CLASSROOMS, etc.—State P. Wks. Dpt., 165 Capitol Ave., plans by Frederic C. Teich, 252 Asylum St., 5 story, brick, steel, concrete, Classroom Bldg., University of Connecticut, $1,250,000; 4 story, brick, steel, concrete, Classroom Bldg., University of Connecticut, Hartford Branch, 1280 Asylum Ave., $1,000,000.

▲ **Conn., Hartford**—LIBRARY, etc.—State P. Wks., 165 Capitol Ave., Hartford Law School, University of Conn. Library and Class Bldg. $1,200,000.

▲ **Conn., Storrs** — ADMINISTRATION, etc. — State Public Wks. Dpt., 165 Capital St., Hartford, administration bldg. addn. Bids in 1958. $500,000, library addn., $1,000,000; Agricultural Engineering Bldg., $400,000. Bids in 1958; utilities, expansion of water, sewage and central heating equipment, $750,000, all above work at University of Conn.

Conn., Rockville—SCHOOL—Town of Vernon, Bd. Educ., Park St., Rockville, plans by Rosetti, DiCorcia & Mileto, 185 Main St., Bristol, elementary school, Lake St. $350,000. CD 3/20.

▲ **Ill., Dixon**—HOSPITAL—Dixon Public Hospital, 403 S. 1st St., plans by Dane Morgan & Assocs., 314 N. 4th, Burlington, Iowa, 3 story, brick hospital addn., bit. paving, 403 E. 1st St. $1,250,000.

Iowa, Cedar Falls—SCHOOL—Bd. Educ., Frank Horn, principal, voted $700,000 bonds Mar. 10, 1 story, 77,000 sq. ft. J. H. Peel Junior High School, Hy. 218, $850,000. Grow & Devoe, 403½ Main St. archts., CD 2/25.

Iowa, Osage—HOSPITAL—Mitchel County Memorial Hospital, Harris Feldick, admin., bond election May 17, 47 x 244 ft. 27 bed hospital addn. $500,000. Charles Altfillisch, Decorah, archt. CD 6/5/56.

Ky., Morehead—DORMITORY—Commonwealth of Ky. Div. Purchases, Frankfort, plans by Joseph & Joseph, Speed Bldg., Louisville, Zone 2, dormitory for Morehead State College. $500,000.

▲ **Me., Augusta**—ACUTE ADMISSION AND TREATMENT, etc.—State, Dpt. Institutional Service, State House, plans by Bunker & Savage, 86 Court St., Acute Admission and Treatment Bldg., State Hospital. $1,500,000. CD 9/26.

Me., Augusta—EMPLOYMENT SECURITY OFFICE—State, Dpt. P. Imprvts., State House, Augusta, plans by Alonzo J. Harriman, Inc., 292 Court St., Auburn, employment security office bldg. $600,000. CD 2/8.

▲ **Mich., Livonia**—SCHOOLS—City, Benton Yates, supt. Schools, Livonia, voted $4,400,000 bonds, constr. six new elementary schools and addns. to schools. CD 12/4.

▲ **Minn., Columbia Heights**—SCHOOL—Bd. Educ., O. Christopherson, clk., voted $2,700,000 bonds Mar. 18, Senior High School. CD 3/14.

Minn., New Brighton—SCHOOL—Bd. Educ., Independent School Dist. No. 38, Mounds View, plans by M & G Buetow, 1931 University Ave., St. Paul, school Lexington Ave. and County Rd. 1, incl. 1 story gymnasium. $550,000.

Mo., St. Louis—COMMUNITY CENTER—City, Frank Kriz, pres. Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., Zone 3, plans by Maurice Carroll, 5473 Delmar Blvd., St. Louis, 12, Mo., community center, 20th and O'Fallon Sts. $630,000. John P. Nix, 25 S. Bemiston Ave., Clayton, Zone 5, structural engr. Ferris & Hamig, 1706 Olive St., St. Louis, Zone 3, mechanical and electrical engr.

▲ **N. J., Clifton**—SCHOOL—City, City Hall, plans by Arthur Rigolo, Grove St. and Rte. 46, high school for quarantine site. $6,000,000. CD 12/11.

▲ **N. J., Edison (Nixon P. O.)**—SCHOOL—Bd. Educ. plans by Scrimenti, Swackhamer & Percontoni, 205 W. Main St., Somerville, Junior High School, $1,600,000.

▲ **N. Y., Alden**—SCHOOLS—Alden Central School Dist., Junior High School, $995,000; Town Line Elementary School. $364,841.

▲ **N. Y., Cheektowaga** — SCHOOL — Marywale School Dist., 1050 Marywale Dr., voted bonds Mar. 15, new 28-room elementary school. $1,450,000. CD 2/17.

▲ **N. Y., East Greenbush**—SCHOOL—East Greenbush Center School Dist., Columbia Turnpike, plans by W. Parker Dodge Assoc., Red Mill Rd., Rensselaer, Junior High School. $2,190,000. Bids about 5 months.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Proj. E-454, P. S. 145, vicinity of Amsterdam Ave. and West 105 St., Manhattan Boro. $2,500,000.

O., Goshen—SCHOOL—Goshen Local School Bd., Goshen, plans by Sullivan-Isaacs-Sullivan, engrs.-archts. 1800 Reading Rd., Reading, O., high school. $625,000.

▲ **O., Lorain**—SCHOOL—Bd. Educ., Lorain, 7-mill levy to be voted May 6, high school $4,816,000. Fulton, DelaMotte & Assocs., 6014 Euclid Ave., Cleveland, Zone 3, archts.. CD 9/17.

▲ **O., Massillon**—SCHOOL—Tuslaw Bd. Educ., Massillon, bond election May 6, high school, $1,250,000. Firestone & Motter, 1412 Cleveland Ave. N. W., Canton, archts. CD 11/13.

▲ **Pa., Bristol**—SCHOOL—Bristol Pa. Bd. Educ., preliminary surveys by Sabatino & Fisher, 116 S. 19th St., Phila. Junior-Senior High School $1,000,000.

▲ **Pa., Heilwood**—SCHOOL—Penn Manor Jt. School Dist., Heilwood, plans by Erlich & Levinson, 1 N. 13th St., Phila., 1 story, 86,000 sq. ft. floor space, brick, Junior-Senior High School. $1,800,000. CD 10/26/55.

▲ **Pa., Petersburg**—SCHOOL—Pa. P. School Bldg. Auth., 101 S. 25th St., Harrisburg, school bldg. for Juniata Valley Jt. School Bd. (Proj. 714-620). $1,271,470.

Pa., Pittsburgh—SCHOOL—Bd. Educ., Forbes and Bellefield, plans by Hoffman & Crumpton, Century Bldg., Belmar Elementary School addn. $500,000.

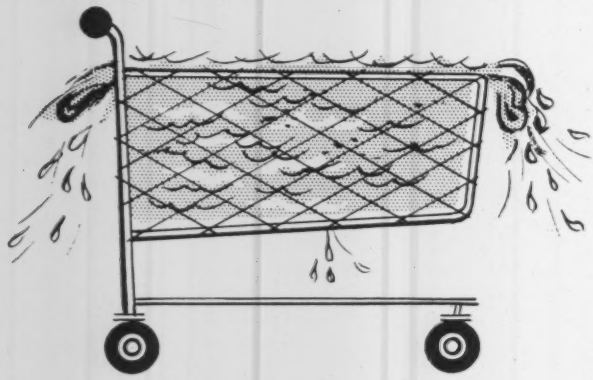
▲ **Tex., Alpine**—SCIENCE, etc.—Sul Ross College, Alpine, plans by W. B. Cantrell, Inc., proj. archt., Pampa, science $750,000; gymnasium $350,000; 50 room dormitory $350,000; classrooms bldg. (Physics-Math.) $400,000; water sys. facilities $60,000. CD 2/26.

▲ **Tex., Huntsville**—DORMITORY, HOUSING, etc.—Sam Houston State Teachers College, plans by Wirtz, Calhoun, Tungate & Jackson, 2516 Richton, Houston. No. 1 womens housing or dormitory units $1,750,000; No. 2 womens housing or dormitory units $2,250,000; No. 1 men's housing or dormitory units $2,000,000; No. 2 men's housing or dormitory units $2,000,000; college clinic $350,000, student union bldg. $450,000. CD 9/9.

Tex., Stephenville—SCHOOL—Stephenville Ind. School Dist., voted bonds Mar. 18 school $500,000 Hedrick, Stanley & Morey, 1200 T & P Bldg., Fort Worth, and 904 Fort Worth Ave., Dallas, archts.-consult. engrs. CD 3/11.

Tex., Sweeny—HOSPITAL—Brazoria County Pub. Hospital Dist. No. 1, c/o Chairman or Matt E. Howard Jr. & Assocs., archts.-consult. engrs. 2444 Times Blvd., Houston, hospital. $500,000-$600,000. CD 2/20.

(Continued on page 102)



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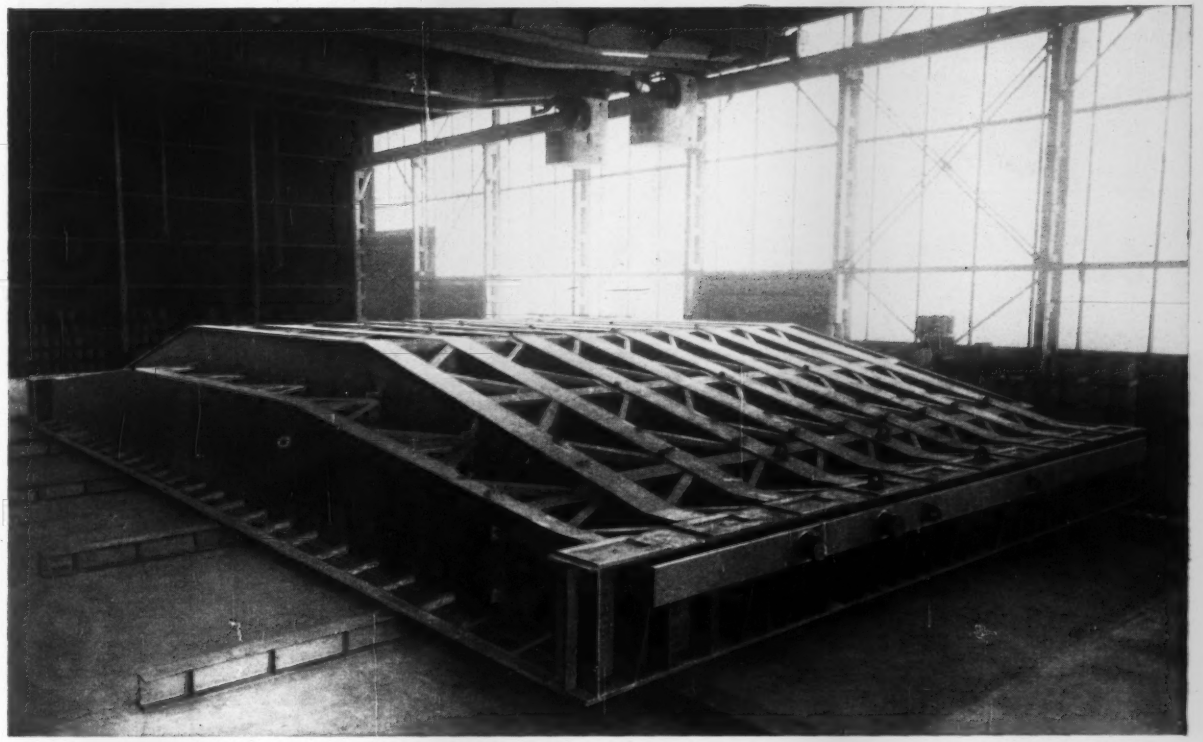

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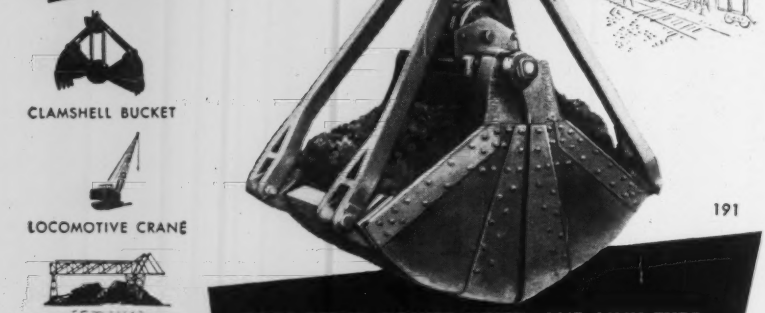

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(Continued from page 100)

Utah, Monticello—HOSPITAL—Bd. Comrs. San Juan Co., plans by Lewis Eric Sandstrom, 290 N. University, Provo, voted $300,000 bonds 27 bed hospital. $500,000.

▲ W. Va., Huntington—PHYSICAL EDUCATION—State Bd. Educ., Capitol Bldg., Charleston, Zone 5, plans by Frampton & Bowers, 1117 5 Ave., health and physical education bldg. at Marshall College, $1,300,000.

Wis., Burlington—SCHOOL—Bd. Educ. voted bonds 1 and 2 story high school addn. $750,000. E. A. Stubenrauch & Assocs., 712 Erie Ave., Sheboygan, archts.

▲ Ont., Toronto—SCHOOL EXPANSION—East York Bd. Educ., Cosburn St., East York, Toronto suburb, expansion of East York Collegiate. $1,000,000.

COMMERCIAL BUILDINGS

▲ Arizona—OBSERVATORY—AURA Inc., (Association of Universities for Research in Astronomy) and National Science Foundation, 1520 H St., N. W., Wash., D. C., national astronomical observatory on Kitt Peak Quinlan Mountains, 40 mi. SW of Tucson. $3,000,000.

▲ Calif., San Francisco—SCOTTISH RITE TEMPLE—The Albert Pike Memorial Temple Assn., c/o Clarence O. Peterson, archt., 116 New Montgomery St., Scottish Rite Temple, Sloat Blvd., $2,500,000.

▲ Conn., New London—COLLEGE IMPRVS.—Connecticut College for Women, Mohegan Ave., replacement Dormitories, Music and Art Bldg., Admin. Bldg., $2,300,000; Faculty Housing, completion of Library Wing and Physical Educ. and Recreation Center. $505,000. Bids in 1958.

Fla., Ocala—MOTEL, etc.—Holiday Inns of America, Inc., c/o James E. Windham 111, archt., 1315 Edgewater Dr., Orlando, 100-unit motel and restaurant, corner W. Colonial Dr. and Westmoreland Dr. $500,000.

Ga., Atlanta—HOUSING—Tanglewood, Inc. & Hightower One., Inc., 3188 Roswell Rd. N.E., 76 5-room frame dwellings. $684,000.

▲ Ill., Evanston—APARTMENTS—Owner, c/o Heil & Heil, 1326 Chicago Ave., plans by Hirschfield & Pawlan, 327 S. LaSalle St., Chicago, 7 story, 164 unit, brick, apartment, NW cor. Grove and Chicago Ave. $2,000,000.

▲ Iowa, Cedar Rapids—HOSPITAL—St. Luke's Hospital, plans by Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, Minn., hospital addn. $2,000,000.

▲ La., New Orleans—ADMINISTRATION, etc.—Archbishop's Chancery, c/o Jos. F. Rummell, 7845 Walmsley Ave., diocesan administration bldg., $850,000; Home for Aged, $550,000; expansion of St. Joseph's Seminary, an St. Benedict, $950,000.

▲ Mass., Boston—MEDICAL UNIT—Boston University School of Medicine, 750 Harrison Ave., plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., medical unit, 80 East Concord St. $3,000,000. CD 5/12/52.

▲ Minn., St. Paul—OFFICE—Mutual Service Insurance Co., 1919 University Ave., plans by Ellerbe & Co., E. 505 First Natl. Bank Bldg., 3 story addn. to existing bldg., 1919 University Ave. $1,000,000. CD 9/19/51.

Mo., Columbia—SHOPPING CENTER—Commonwealth Theaters, Inc., 215 W. 18, Kansas City, Mo., plans by Geis-Hunter Ramos, 7920 State Line, Kansas City, Mo., 60,000 sq. ft. shopping center, 16A in 1500 block on W. Broadway. $750,000.

▲ N. H., Plymouth—DORMITORY—Holderness School, Plymouth, dormitory. $1,000,000.

N. Y., Hamilton—CHAPEL—Colgate University, C. C. Houck, supt. Bldgs. and Grounds, Hamilton, plans by Skidmore, Owings & Merrill, 425 Park Ave., New York, Zone 22, chapel house. $600,000. Slocum & Fuller, 207 E. 32 St., New York, Zone 22, mechanical engrs. CD 3/18.

N. Y., New York—HOSPITAL—Beth Israel Hospital, Stuyvesant Sq. E. and 17 St., Zone 3, plans by Schuman & Lichtenstein, 369 Lexington Ave., Zone 17, N. Y. 6 story hospital addn. $500,000.

▲ N. Y., New York—APARTMENT—John J. Campagna, 654 Madison Ave., Zone 21, plans by Paul Resnick, 654 Madison Ave., Zone 21, 19 story apartment, 201-7 E. 63 St. corner of 3rd Ave. $2,000,000.

▲ O., Bedford Heights—APARTMENT—A. Siegler & Sons, 5117 Lee Rd., Bedford, plans by Marvin J. Rukin, 13947 Cedar Rd., Cleveland, Zone 18, 110-suite apartment development, Libby Rd. $1,250,000.

▲ O., Chardon—EDUCATIONAL CENTER—Sisters of Notre Dame, Superior at Ansel Rd., Cleveland, Zone 6, plans by Emil J. Biskup, 3115 Prospect Ave., Cleveland, Zone 15, 3 story Educational Center, to serve as mother house and teacher training center, $700,000; high school, $1,300,000. Arthur E. Rowe & Assocs., 3115 Prospect Ave., Cleveland, Zone 15, consult. engrs. CD 10/18/56.

▲ O., Cincinnati—SCHOOL—Catholic Archdiocese of Cincinnati, 29 E. 8th St., plans by Betz & Bankemper, 319 Scott St., Covington, Ky., high School, Monfort Heights area. $1,000,000.

▲ O., Cincinnati—FEDERAL OFFICE—General Services Admin. 18th and F Sts., Wash. 25, D. C. federal office building (lease-purchase) 5th and Main Sts. $21,700,000.

O., Cincinnati — CLASSROOM — Xavier University, Dana Ave. plans by A. V. Walters, 707 Race St.,

(Continued on page 104)

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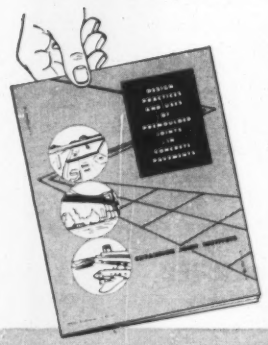

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(Continued from page 102)

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O., Dayton—SHOPPING CENTER—Harold Boedecker, 3135 Highland Dr., Zanesville, semi-circular shape Shopping Center, Harshman Rd. and Valley Pike, Mad River Twp., near here. $500,000.

▲ O., Highland Heights—HOUSING—Morlee Builders, Inc., 5015 Emmet Rd., Lyndhurst, designed by Morton Burnstein, c/o owner, 54 homes on site in Highland Heights. $1,080,000.

▲ O., Oberlin—BAKERY—Pepperidge Farm, Inc., Westport Ave., Norwalk, Conn., 50,000 sq. ft., bakery Route 10 and Oberlin Rd. (to be in operation 1960) $1,000,000.

▲ O., Stow—HOUSING—B. & I. Constr. Co., 2515 Graham, Akron, 500-home addn. to Maplewood Park Homes, $9,000,000.

▲ O., Wickliffe—APARTMENTS—Owner, c/o Weinberg & Teare, archts., Citizens Bldg., Cleveland, Zone 14, 20 apartments, Ridgewick Gardens. $2,500,000.

Pa., Coatesville—SHOPPING CENTER—Jarpenn, Inc., c/o J. A. Robbins, pres., 3 Penn Center Plaza, Phila. shopping center, Caln Twp., Rte. 30. $750,000.

Pa., Phila.—BOWLING ALLEYS—A. M. Ellis Theatres Co., 1221 Vine St., plans by Supowitz & Berger, 246 S. 15th St., bowling alleys. $500,000.

▲ Tex., Beaumont—HOSPITAL, etc.—Sisters of the Incarnate Word, c/o St. Elizabeths Hospital, NW corner Calder Ave. and 11th St., plans by Pitts, Mebane & Phelps, archts.-consult. engrs., 1872 Calder St., 5 story, 150,000 sq. ft. masonry hospital and convent. $4,000,000. B. Johnson & Assocs., 4926 Travis St., consult. engrs. CD 10/8.

▲ Tex., Dallas—OFFICE—Angus Wynne Jr., Wynnewood Prof. Bldg. and Toddie Wynne, 371 Gillespie, Office No. 1. $3,000,000; Office No. 2. $2,500,000.

▲ Tex., Houston—HOSPITAL—Houston Negro Hospital, 2900 Elgin St., plans by Maurice J. & Chas. F. Sullivan, 3901 Travis, hospital unit. $1,235,000. B. Johnson & Assocs., 4926 Travis, and Joe T. Strother, 2501 Van Buren, consult. engrs. CD 3/14.

Tex., Odessa—SHOPPING CENTER—Great Oil Basin Securities Co., c/o Floyd Schultz, Odessa, plans by Nesmith, Lane & Kuykendall, 609 E. Yandell Blvd., El Paso, Units 2 and 3, shopping center. $750,000.

Tex., Post—EDUCATIONAL—First Methodist Church Congregation plans by Atcheson, Atkinson & Cartwright, 1007 Texas Ave., Lubbock, educational. $575,000.

▲ Va., Norfolk—DOCTORS OFFICE—Doctors' Bldg. Comm., c/o Vincent G. Kling, archt., 917 Corinthian Ave., Phila., Pa., 10 story, 117,000 sq. ft. floor space doctors office bldg. with office space for 100 and medical center facilities. West Ghent section of here. $2,500,000.

Wash., Edmonds—APARTMENT—H. F. Haines, Haines Boat House, 3 story, 50 unit rein.-con. apartment, $580,000 constr. this year.

Wash., Seattle—MOTEL AND GARAGE—H. Delaloye, 814 Lakeside Ave. S., 3 story, masonry, frame motel and 2-level rein.-con. garage, on 96 x 240 ft. site, at 213 Aurora Ave. $600,000. W. S. Kelton, 317 Queen Anne Ave., consult. engr.

Ont., Schomberg—INDUSTRIAL PLAZA—Hermes Development, 152 King St. E., Toronto, Ont., plans by Development Program Consultants, archt. consult engrs., 69 Bloor St. E., Toronto, 1 story, 90,000 sq. ft. floor space, masonry constr., steel beams Industrial Plaza near Hy. No. 400. $500,000.

▲ Ont., Windsor—OFFICE—Owner, c/o Thrasher Real Estate, 1596 Ouellette St., plans by Wm. J. Hilliker, 182 Pitt St. W., Room 311, Murray Bldg., 7 story, 50,000 sq. ft. structural steel, brick and glass office Bldg., Goyeau St. $1,000,000.

▲ Que., Quebec City—HOSPITAL—Hospital St. Sacrement, 440 Chemin Ste. Foye, Quebec City, hospital addn. $2,000,000.

▲ Que., Sorel—HOUSING—Les Developments Bellevue, c/o Camille Huppe & Blaise P. Lincourt, 70 St. du Roi, Sorel, Que., housing development (120 houses), Blvd. Mandeville. $1,000,000.

INDUSTRIAL BUILDINGS

Conn., Bridgeport—PLANT—Bassick Co., 437 Howard Ave., mfg. plant expansion $750,000. CD 10/21/46.

▲ Ind., Evansville—RESEARCH CENTER—Mead-Johnson & Co., 2404 Penn St., plans by Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., research center and industrial park, State Rte. 62, incl., admin. bldgs., 7 story headquarters office bldg., employee training and development bldg., 2 story cafeteria and reception center, etc. $8,500,000.

▲ La., New Orleans—GRAIN ELEVATOR—Continental Grain Co., 26 Broadway, New York, N. Y. 2,500,000 bu. grain elevator on west bank Mississippi River. $3,000,000-$6,000,000.

N. J., Asbury Park—PARKING GARAGE—Dr. Sebastian Vaccaro, 509 Fourth Ave., 7 story, 300-car parking garage Bangs Ave. adjacent to City Hall. $500,000. Parking Authority, lessee.

▲ N. J., Elizabeth—FACTORY—Metro Glass Bottle Co., 107 West Side Ave., Jersey City, factory for manufacture of glass bottles in meadowlands. $1,000,000.

O., Cincinnati—PARKING GARAGE—Emery Realty, Inc., Carew Tower, plans by Fred. Branning, St. Claire Shores, Mich., 6 story bsmnt. 100 x 240 ft. brick rein.-con. 400 car capacity garage retail stores on ground level. $750,000. constr. summer 1958. Enco Eng. Co., Cass Ave., Detroit, Mich., consult. engr. Owners staff engr. c/o Harry Fath, Carew Tower, Cincinnati, O., CD 8/15.

▲ O., Northfield—FREIGHT TERMINAL, etc.—Freight Inc., 408 Welington, Akron, freight terminal and office, Route 8 south of Twinsburg Rd. $1,000,000.

Pa., Brackenridge — LABORATORY — Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh, plans by Wm. B. Simboli & Assocs., Oliver Bldg., Pittsburgh, 1 and 2 story, 350 x 50 ft. steel frame light laboratory bldg. $500,000.

Pa., Carlisle—PLANT—Bedford Shoe Co., 726 Factory St., 50,000 sq. ft. shoe mfg. plant. $500,000.

▲ Pa., Lititz—PLANT—Warner Lambert Pharmaceutical Co., Lititz, plant expan. for making of bromoseltzer $1,500,000.

▲ Pa., Monaca—MILL—Pittsburgh Tube Co., Monaca, mill for mfg. of continuous weld pipe. $1,250,000.

Pa., Monroeville (Br. Turtlecreek)—RESEARCH LABORATORY—U. S. Steel Corp., 525 Wm. Penn Place, Pittsburgh, plans by Chas. & Edw. Stotz, 502 Bessemer Bldg., Pittsburgh, 2 story, brick, block steel frame research laboratory. $500,000.

▲ South Carolina—PLANT—Carolina Light & Power Co., 336 Fayette St., Raleigh, N. C., 250,000 hp. (1st unit) generating plant near Hartsville. Total capacity will be 1,350,000 hp. $25,000,000.

▲ Tenn., Greenville—PLANT—Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind., plant addns. in 1959. $9,000,000.

Tex., Houston—WAREHOUSE—Western Auto Supply Co., 908 Wood St., plans by Floyd & James, 3813 Buffalo Speedway, 1 story, 180,000 sq. ft. warehouse, 3484 W. 11th St. $500,000.

UNCLASSIFIED

Conn., New Haven—STORAGE TANKS—Mobil Oil Co., Inc., 134 Forbes Ave., 8 steel oil storage tanks, relocate 16 existing storage tanks. $568,796.

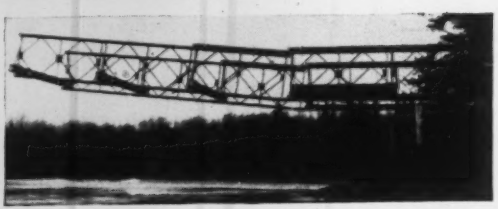
▲ Pa., Pittsburgh—ICE SKATING RINKS, etc.—Bd. Comrs. Allegheny Co., Dpt. Parks, 320 County Office, plans by D. K. Ritchey Assoc. 2007 Clark Bldg., 232x 94 ft. large ice skating rink; 50x25 ft. small rink; 1 story, 76x26 ft. restaurant; 76x26 ft. equipment bldg., North Park; $800,000; plans by Kenneth Saylor, co. archt., 370 County Office Bldg., and Chas. M. & Edward Stotz, archts., Bessemer Bldg., 94x233 ft. large rink, 50x25 ft. small rink, 1 story, 76x26 ft. restaurant and 1 story, 76x26 ft. equipment bldg., South Park, $800,000.

▲ Texas—RURAL DISTRIBUTION LINES—Lyntegar Electric Co-operative, Tahoka, sys. imprvs. Tahoka, in Lynn Co., TX-60V-Lynn, $1,592,000.

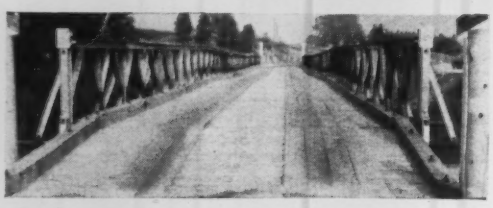
Texas—RURAL DISTRIBUTION LINES—Magic Valley Elec. Co-operative, Mercedes, 150 mi. rural lines and some sys. imprvs., Mercedes, $695,000. CD 12/9/55.

ALL IN A DAY'S WORK

9.00 a.m. Arrive site with Bailey Bridge units in standard trucks. Illustration shows Bailey Bridge units being assembled by unskilled labor. Completed by 12 noon.



3.00 p.m. Bridge launched. Simple launching system cuts equipment costs.



6.00 p.m. Timber decking laid and open to traffic. Traffic rolls within hours.

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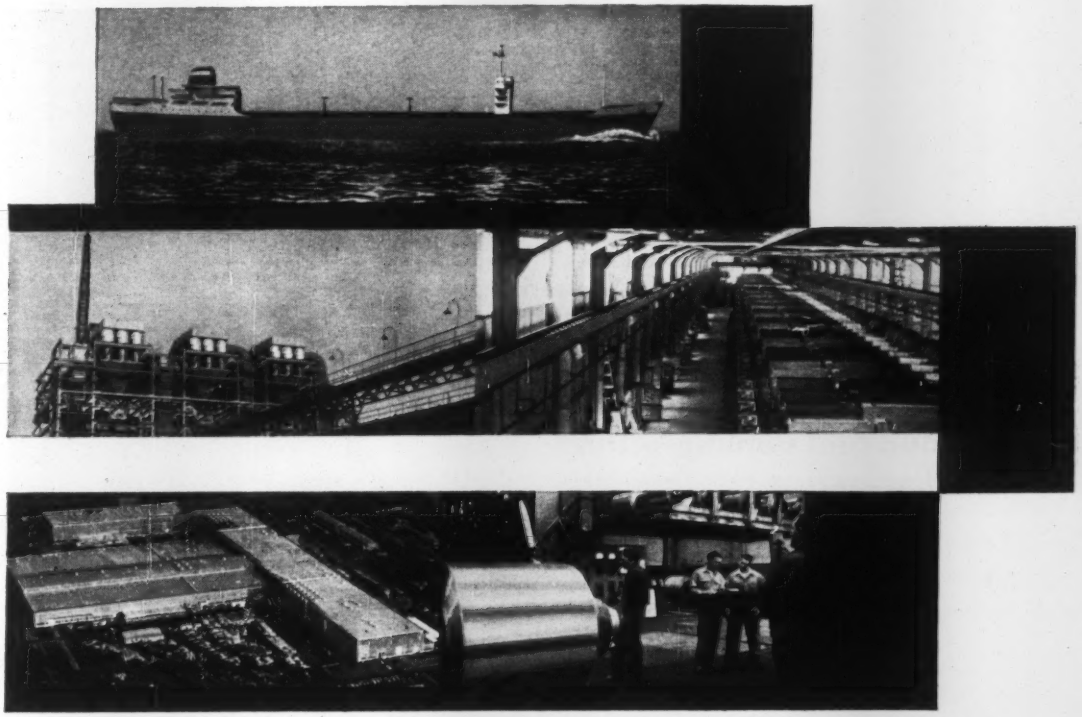

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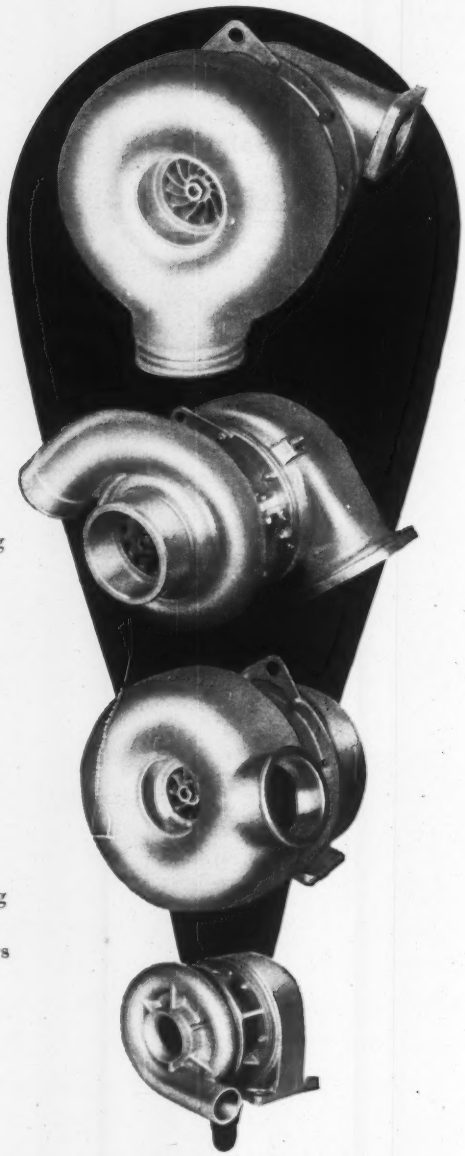

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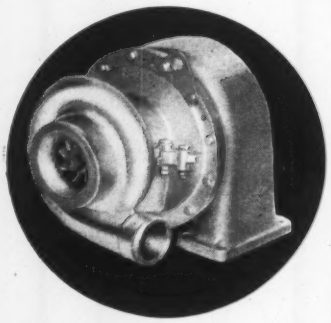

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 22 Massachusetts

BUILDINGS—BA

Mass., **Boston**—STATE ARCHIVES—BA 4/25—Commonwealth of Mass., Supt. Bldgs., State House, Boston, facilities for housing archives, State House. $800,000. Plans deposit $50. Maurice A. Reidy, 101 Tremont St., engr. CD 2/15.

BUILDINGS—LB & CA

▲ **E & F Constr. Co.,** 94 Wells St., Bridgeport, Conn., LB **$1,187,000,** est. $1,750,000 (6 bidders) second-unit HOSPITAL addn., DANBURY, CONN. Danbury Hospital, Locust Ave., Danbury, Conn. Bids Mar. 27. CD 3/12.

▲ **H. U. Bail & Sons, Inc.,** 9 Franklin St., Southbridge, Mass., LB **$1,425,900,** (8 bidders) Proj. Conn. 24-1, 124 units, 29 bldgs., Hampshire Heights HOUSING, PUTNAM, CONN. Putnam Housing Auth., City Hall, Putnam, Conn. Bids Mar. 27. CD 3/11.

▲ **Vuono Constr. Co.,** 217 Bedford St., Stamford, Conn., CA **$1,000,000,** FACTORY addn, alterations, incl. installation air-conditioning, STAMFORD, CONN. Pitney-Bowes, Inc., 69 Walnut St., Stamford, Conn. Leo F. Caproni, 132 Temple St., New Haven, Conn., archt. Awarded Mar. 27.

▲ **Charles Simpkin & Sons,** 95 New Brunswick Ave., Perth Amboy, N. J., LB **$1,659,658** (13 bidders) Phase 2: two bldgs. and processing system, PLANT, WINDSOR, CONN. Combustion Eng., Inc., Reactor Dev. Div., Central Ave., Windsor, Conn. Hayden, Harding & Buchanan, 1340 Soldiers Field Rd., Brighton, Mass., archts. Bids Mar. 19. CD 3/12.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 25 Pennsylvania
STREETS AND ROADS
April 17 New Jersey April 25 Pennsylvania

▲† **N. Y., Plattsburgh**—REHABILITATION PROGRAM—BA 5/7—U. S. Eng., 111 E. 16 St., New York, Zone 3, rehabilitation existing facilities, Phase III, Plattsburgh Air Force Base, Serial No. ENG-30-075-58-107. $1,000,000-$1,500,000. Plans deposit $100. CD 4/30.

BUILDINGS—BA

Md., **Towson**—SCHOOL—BA 4/15—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4, brick, concrete, steel, block Battle Grove Elementary School near Dundalk. $800,000. Plans deposit $40. Edw. J. Hofstetter, 2025 E. North Ave., Baltimore, Zone 13, archt.

▲ **B. C., Wash.**—DORMITORY—BA 4/16—American University, Massachusetts and Nebraska Aves. N.W., Dormitory "E" Bldg. $1,250,000. Plans deposit $30. Extended date. Faulkner, Kingsbury & Stenhouse, Ring Bldg., archts. CD 3/19.

▲ **Pa., Kittanning**—HOSPITAL—BA 4/18—Armstrong Co. Memorial Hospital, 5 story, bsmnt. steel frame hospital addn., alterations. $1,500,000. Plans deposit $100. James K. Scheeran, 645 Croyland Ave., Indiana, archt.

▲ **N. Y., New York**—HOUSING—BA 4/22—New York City Housing Auth., 299 Broadway, Zone 7, fdns. and general constr. incl. heating and ventilating, electric work and plumbing for Manhattanville Houses, Proj. No. NYS-74, located in area bounded generally by W. 133 St., Amsterdam Ave. W. 129 St., W. 126 St., Broadway, W. 131 St. and Old Broadway, Manhattan Boro. Plans deposit $75. CD 4/31.

Pa., **Harrisburg** — HOSPITAL — BA 4/29 —Polyclinic Hospital, 4th St. at Polyclinic Ave., 5 story 68 bed exten. to existing hospital incl. facilities for mental patients. $955,000. Plans deposit $30. Lawrie & Green, 321 N. Front St., archts. CD 12/12.

▲ **N. Y., Flushing**—MUSIC AND ARTS BLDG.—BA 5/1—Bd. Higher Educ., Queens College, Bus. Office, Bldg. H, 65-30 Kissena Blvd., Zone 67, general constr. plumbing, heating and ventilating, electrical work music and arts bldg. Queens College. Plans deposit $60 general, $40 for plumbing and electrical work, $30, heating and ventilating. CD 1/9.

▲ **Pa., Wernersville** — PATIENT WARD BLDGS. — BA 5/7—General State Auth., 18th and Herr Sts., Harrisburgh, 2 patient ward bldgs. for Wernersville State Hospital. $4,000,000. Plans deposit $50. Thalheimer & Weitz, 1315 Walnut St., Phila., archts. A. F. Jones, c/o owner, ch. engr. CD 10/17/56.

HEAVY CONSTRUCTION—LB & CA

▲ **Stock Constr. Co.,** 70 E. 45 St., New York, N. Y., CA **$6,782,000,** Contr. No. 3003, demolition and removal of Piers, 37, 38, 39, 40 and 41; dredging and constr. substructure of new Pier No. 40, North River, Manhattan Boro, NEW YORK, N. Y. Comm. Marine & Aviation, Pier 1, North River, Zone 4, N. Y. Bids Feb. 17. CD 2/19, under LB.

Union Switch & Signal Co., 350 Fifth Ave., New York 1, N. Y., LB **$941,281** (2 bidders) furnishing, installing addnl. signal equipment on local tracks for West Side Improvt., Broadway-Seventh Ave. Line IRT Division, Chambers St. to 34 St., Manhattan Boro. Contr. S-98, NEW YORK, N. Y. New York City Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Mar. 28. CD 3/4.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 3/28,

Obrien & Redmond, Box 411, Devon, Pa. LB **$1,104,648** (4 bidders) plate girder bridge and 4,229 ft. c. conc. variable in width as 2 separated hys. T.R. 88, Moncaca Freedom and E. Rochester Boros, Beaver Co. CD 3/6.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg, Bids opened 3/28,

Ben Constr. Co. & Allegheny Contg. Co., 101 Hargrove St., Pittsburgh, Pa. LB **$2,051,904,** est. $2,200,000 (5 bidders) wid'n. 33,656 ft. existing road with rein. c. conc. 22 ft. wide to make divided by L.R. 330-12 (Proj. 704-1) Interstate, Jefferson and Pleasant Hills Boros, Allegheny Co. CD 3/5.

▲ **Conduit & Foundation Corp.,** 158 N. 20th St., Phila. 3, Pa., CA **$1,423,180,** Torresdale Filter Plant, Bid No. 2965, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Mar. 11. CD 3/28.

BUILDINGS—LB & CA

Georgian Estates, 1271 St. Nicholas Ave., New York, N. Y. Owner Builds. **$800,000,** 66x101 ft. multiple DWELLINGS, 109-04 Queens Blvd., southeast corner 72 Ave., FOREST HILLS, N. Y. CD 5/8.

▲ **45 E. 72 St. Corp.,** 852 Stone Ave., Brooklyn, Zone 12, N. Y. Owner Builds. **$2,000,000,** 19 story APARTMENT, 45 E. 72 St., NEW YORK, N. Y. CD 3/13.

▲ **John W. Ryan Constr. Co.,** 11 West 42 St., New York, N. Y., CA **$3,075,000,** est. $3,000,000, HOSPITAL addn., alterations, SUMMIT, N. J. Overlook Hospital, 193 Morris Ave., Summit, N. J. Bids Jan. 30, contract awarded third LB. (Correction—contractor's address). CD 3/4, under CA.

▲ **J. Roland Dashiell & Sons, Inc.,** Pinebluff and S. Salis. Blvd., Salisbury, Md., LB **$1,014,957** (4 bidders) ELEMENTARY SCHOOL, SEAFORD, DEL. Seaford Del. Special School Dist., Seaford, Del. Bids Mar. 19. CD 2/27.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 15 South Carolina April 18 Kentucky
April 23 Louisiana
STREETS AND ROADS
April 15 South Carolina April 18 Kentucky

HEAVY CONSTRUCTION—LB & CA

▲† **William A. Smith Constr. Co.,** 1401 Fairfax Trafficway, Kansas City, Kan., CA **$1,177,453,** relocation of B. & O. R. R. bridge superstructures and trackwork, Sutton Reservoir Proj., Elk River, WEST VIRGINIA. U. S. Eng., Box 2127, Huntington, W. Va. Bids Mar. 20, awarded Mar. 26. CD 3/25, under LB.

▲ **FLORIDA**—State Hy. Dpt., Tallahassee, bids opened 3/27,

Fla.—**Duval Eng. & Contr. Co.,** Box 1588, Jacksonville, Fla., LB **$1,298,612,** est. $1,600,000, (7 bidders) FA Proj. No. 1-101-5(7) Job. No. 7202-487) and State Proj. No. 7202-190, SR 5 and 9, between Kenmore St. and Trout River in Jacksonville, cement concrete pavement, rock base with Type 1 b. conc. surf. course and binder course; drainage structures, 2 double concrete deck grade separation bridges on concrete piling over Lem Turner Rd. and Edgewood Ave.; 1 double concrete deck bridge on concrete piling over Moncrief Creek; removal of bldgs., fencing and incid. items, 1.655 mi. Duval Co.;

Fla.—**Ewell Eng. & Contr. Co.,** Box 791, Lakeland, Fla., LB **$86,941,** est. $80,000 (7 bidders) State Proj. Job. No. 1628-107, SR 542, Central Ave. in Winter Haven, from 1st St. North to 4th St. North, light grading, limerock base, primed. Type 11 b. conc. surf. course, 0.255 mi. Polk Co.; LB **$1,540,988,** est. $1,700,000 (11 bidders). FAP F-031-1 (6) (Job No. 1606-201) and State Proj. 1606-108, SR 35 and 700 (US 98), rock base with Type 1 b. conc. surf. course and binder course 10.324 mi. between SR 60 in Bartown and Carey's corner in Lakeland, 8½ in. rock base, b. conc. one 90 ft. concrete dual deck bridge on concrete piling; surface course and binder course, 1 concrete box culvert of bridge length, FAP No. F-031-1 (6) Job. No. 1606-201 and State Proj. 1606-108, Polk Co. CD 3/12.

▲† **J. C. Harper Constr. Co.,** 307 Harwood Ave., Orlando, Fla., LB **$1,359,121,** est. $1,810,860, operations program, Pinecastle Air Force Base, FY-56, ENG-08-123-58-29, PINECASTLE, ORLANDO, FLA. U. S. Dist. Eng., Box 4970, Jacksonville, Fla. Bids Mar. 25. CD 2/20.

▲ **Moss Thornton Co., Inc.,** Leeds, Ala. CA Total **$8,000,000,** access roads and site preparation for Weiss Dam, Cocsa River, Center and Leesburg, Cherokee Co., ALABAMA. Alabama Power Co., 600 N. 18th St., Birmingham, Ala. CD 11/25/53;

Westinghouse Electric Co., P. O. Box 868, Pittsburgh 30, Pa. CA 2 generators with electrical control equipment and station equipment (Alabama);

Woodard Governor Co., 5003 N. 2 St., Rockford, Ill. CA governors (Alabama);

Allis Chalmers Mfg. Co., 864 S. 70th St., Milwaukee 1, Wis. CA 2 turbines (Alabama).

▲ **TENNESSEE**—State Hy. Dpt., Nashville, Bids opened 3/28

Tenn.—**Oman Constr. Co.,** Acklen Park, Nashville, Tenn. LB **$1,938,888** paving with c. conc. and constr. 3 bridges (1 prestressed box beam type for an interchange at 9th St., 1 concrete deck girder for a separation at 6th St. and 1 deck girder for an interchange at 4th St.) 0.839 mi. section Interstate Rte. No. 513 in Chattanooga beginning at W. 12th St. and extend, to south end of new Tennessee River Bridge, Proj. Nos. I-513 (3) Hamilton Co., paving with c. conc. and constr. curbs and sidewalks 0.059 mi. section State Rte. No. 58 (4th St.) in Chattanooga beginning at Chestnut St. and extend. to Broad St. Proj. U-060-1 (4) Hamilton Co.;

Tenn.—**Farrar Constr. Co.,** McMinnville, Tenn. LB **$514,673** surf. with crushed stone and bit. materials 3.952 mi. section of relocated state Rte No. 1, beginning at present Rte No. 1, 0.5 mi. west of McMinnville and extend. in an easterly direction and north of city to point on present Rte No. 1, 0.5 mi. east of McMinnville, Proj. F-001-5 (33) Warren Co.;

Tenn.—**J. B. Michael & Co.,** 1021 Heywood, Memphis, Tenn. LB **$1,515,667,** grading, drainage, surf. 5.35 mi., concrete curbs, sidewalks and c. conc. paving 0.15 mi., 6 bridges, State Rte. No. 1. Proj. F-001-2 (19), Madison Co.;

Tenn.—**Clinchfield Concrete Co.,** Kingsport, Tenn. LB **$1,009,456,** grading, drainage 1.578 mi., concrete curbs, parking lanes and sidewalks and constr. 1 concrete box type bridge and 1 pair parallel prestressed concrete beam bridges section of relocated State Rte. No. 1, beginning near Rogan St. west of Kingsport west city limits and extend. to old State Rte. No. 36, in Kingsport, Proj. F-001-9 (25) Sullivan Co.;

Tenn.—**Haynes Constr. Co.,** Bluefield, W. Va. LB **$2,522,045** grading, drainage, constr. 3 bridges (1 single and 2 twin structures) 3.456 mi. section Inter. Rte. No. 503 beginning near the Caney Fork River west of Buffalo Valley and extend. to point 2.7 mi. west of Silver Point Proj. I-503 (14) Putnam Co. CD 3/12.

BUILDINGS—LB & CA

▲ **Link-Belt Co.,** Prudential Plaza, Chicago 1, Ill. CA **$10,000,000** total with equipment $19,000,000 coal preparation PLANT, DANTE VA. Clinchfield Coal Co., Dante, Va.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 23 Michigan
STREETS AND ROADS
April 16, 23 Michigan April 17 Illinois
April 29 Ohio

▲ **Ill., Chicago**—BA 4/16—City, City Hall, aux. outlet sewers, Wellington Ave. system, Contr. No. 1. $2,800,000. CD 6/10.

▲† **Ind., Ferndale**—BA 5/6 (tentative)—U. S. Eng., P. O. Box 59, Louisville 1, Ky., dam and spillway, Mansfield Reservoir, 2,000,000 cu. yd. excav., over 1,700,000 cu. yd. embankment, ENG.-15-029-58-31, Over $2,000,000.

BUILDINGS—BA

▲ **O., Cincinnati**—COMMUNITY CENTER—BA 4/22—Jewish Community Center, 1430 Central Parkway, community center bldg., Reading Rd. $1,500,000. Plans deposit $50. Pepinsky-Grau-Schrand & Schorr, Union Tr. Bldg., archts. Geo. Wagschal, 1201 Majestic Bldg., and Victor Gruen & Assocs., 2100 Industrial Bldg., both Detroit, Mich., engrs.

BUILDINGS—LB & CA

Frank Messer & Sons, Inc., 4612 Paddock, Cincinnati, O., LB **$889,700** (7 bidders) est. $1,800,000, MEN'S DORMITORY addn., University of Cincinnati, CINCINNATI, O. Potter, Tyler, Martin & Roth, archts., 128 E. 6th St., for University of Cincinnati, Cincinnati, O. Bids Mar. 5. CD 2/25.

▲ **Virginia Homes, Inc.,** 655 N. Cassady Ave., Columbus, O., Owner Builds, **$1,200,000,** 100 HOMES, 3100 block of Parsons Ave., COLUMBUS, O.

▲ **Southfield Co.,** 33 N. High St., Columbus, O., Owner Builds. **$3,500,000,** 305 low-cost HOMES, near Lockbourne Rd., COLUMBUS, O.

▲ **Fred Teitelbaum Constr. Co.,** 5526 N. Kedzie Ave., Chicago, Ill., CA **$1,000,000,** 1 story, 202,000 sq. ft., brick, WAREHOUSE addn., railroad tracks, 1955 W. North Ave., MELROSE PARK, ILL. Jewel Tea Co., 1955 W. North Ave., Melrose Park, Ill. A. Epstein & Sons, Inc., 2011 W. Pershing Rd., Chicago, Ill., archt.

▲ **Martin Kulick,** 6924 W. Grand Ave., Chicago, Ill., Own Forces. **$4,000,000,** 200 HOMES, MORTON GROVE, ILL.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 17 Kansas
STREETS AND ROADS
April 17 Kansas

BUILDINGS—BA

▲ **Minn., Minneapolis**—HOSPITAL—BA 4/15—Deaconess Hospital, 1412 E. 24th St., 5 story, bsmnt. 42 x 218 ft. hospital wing, penthouse, remodel existing bldg. $1,600,000. Magney, Tusler & Setter, 303 Roanoke Bldg., archts. CD 3/25/57.

▲ **Mo., St. Louis**—HOSPITAL—BA 4/22—Missouri Pacific Employees' Hospital Assoc., Harry J. Mohler, pres. and hospital admin., 1755 S. Grand Blvd., Zone 4, 4 story brick, stone (Mankato) porcelain, steel panels, concrete etc. 187 ft. x 54 ft. and 55 ft. x 61 ft. addn. for aged and chronically ill patients on Shaw Ave. joining present hospital connecting passages 11 ft. x 18 ft. Over $1,000,000. Wm. C. E. Becker, 411 N. 7 St., Zone 1, and Toensfeldt & Horch, Security Bldg., Zone 2, mech. and elec. engrs. CD 6/6.

▲ **Tex., Austin**—ENGINEERING—BA 5/1—University of Texas, Bd. Regents, c/o Admin. Bldg., engineering $1,500,000. Jessen, Jessen, Millhouse & Greeven 2816 Hemphill, and Page, Southerland & Page, 602 W. Ave., both Austin, archts. CD 5/27.

HEAVY CONSTRUCTION—LB & CA

▲ **Lametti & Sons,** 211 N. Pascal St., St. Paul, Minn., LB **$908,487,** Proj. A-1, 230,000 lin. ft. 8- to 24-in. sanitary sewers Proj. No. 1, 2 and 3, MAPLEWOOD, MINN. Village, F. R. Schmid, clk., Maplewood, Minn. Bids Mar. 27. CD 3/14;
R. W. Moore, 886 Edmund Ave., St. Paul, Minn., LB **$375,013,** Proj. A-3, LB **$189,835** Proj. A-2, sanitary sewers. (Maplewood, Minn.);
Barbarossa & Sons, St. Cloud, Minn., LB **$85,000** Proj. B, 4 sewage lift stations and treatment plant (Maplewood, Minn.).

▲ **Fruin Colnon Contg. Co.,** 1706 Olive St., St. Louis 3, Mo., LB **$1,196,240,** est. $1,130,000 (6 bidders), imprvt. MacArthur Bridge across Mississippi River between St. Louis, Mo. and East St. Louis, Illinois, incl. replacing present blacktop highway deck, surf. conc. asph., etc., ST. LOUIS, MO. City, Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., St. Louis 3, Mo. Bids Apr. 1. CD 3/3.

▲† **Morrison-Knudsen,** 319 Broadway Ave., Boise, Idaho, **Peter Kewit Sons Co.,** Omaha National Bank, Omaha, Neb., **Al Johnson Constr. Co.,** Foshay Tower, Minneapolis., Minn., **Condon-Cunningham Co.,** 4229 Lafayette, Omaha, Neb., and **F&S Contracting Co.,** 1300 Chicago St., Butte, Mont. LB **$13,613,613** combined bid (3 bidders.) power structure intake shafts and upstream tunnels near Pierre, Oahae Reservoir Proj., CIVENG-25-066-58-53, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 25. CD 10/16.

▲ **TEXAS**—State Hy. Comn., Austin,
Tex.—**Fred Hall & Son and Uvalde Constr. Co.,** P. O. Box 488, Valley Mills, Tex. CA **$1,979,095.** b. concrete, flex. base and hot mix b. conc. 8.985 mi. Hy. IH 45 and US 75. Proj. I 569 (25) and F 569 (29), Navarro Co.;
Tex.—**Gaylord Constr. Co.,** P. O. Box 6157, Houston, Tex. CA **$586,960,** pavement wid'n. and hot mix b. conc. 8.768 mi. Hy. SH 35, Proj. C 178-3-31, Brazoria Co.;
Tex.—**Cage Bros.,** 6959 San Pedro Ave., San Antonio, Tex. CA **$2,195,582,** concrete and hot mix b. conc. 4.848 mi. Hy. IH 10 Proj. I 112 (7) Bexar Co. Grand total $4,771,637. Bids Mar. 18, awarded Mar. 26. CD 3/21, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,
Tex.—**Austin Bridge Co.,** P. O. Box 1590, Dallas, Tex. CA **$653,908** grading, structures, foundation course and 2 course surf. treat. 5.28 mi. Hy. US 79, Proj. F 582 (10) Robertson and Leon Counties;
Tex.—**Flennikan Constr. Co.,** P. O. Box 634, Shreveport, La. CA **$1,202,009** c. conc. 11.876 mi. Hy. US 82, Proj. U 595 (20) and U 549 (9), Cooke Co.;
Tex.—**E. E. Hood & Son & Ward Constr. Co.,** P. O. Box 6097, San Antonio, Tex. CA **$864,114,** flex. base and 2 course surf. treat 23.755 mi. Hy. SH 44. Proj. S 2266 (1), Duval Co.;
Tex.—**Killian House Co.,** 4600 Broadway, San Antonio, Tex. CA **$2,667,259,** concrete and hot mix b. conc. 2.160 mi. Hy. IH 35. Proj. I 264 (12), Bexar Co. Grand total $5,387,290. Bids Mar. 19, awarded Mar. 26. CD 3/24, under LB.

▲† **Farnsworth & Chambers Co., Inc.,** 3601 Brock St., Houston 1, Tex., CA **$1,780,730** Sch. 1, 150,000 sq. ft. masonry building, ordnance structures, etc., Amarillo Air Force Base, ENG-34-066-58-20, AMARILLO, TEX. U. S. Eng., Box 6, Tulsa 2, Okla. Bids Mar. 19. CD 3/26, under LB;
Gilvin-Terrill Co., 413 E. 3 St., Amarillo, Tex., CA **$599,650,** Sch. 2, exterior facilities in buildings, asph. drives, parking areas, etc. (Amarillo, Tex.).

▲† **Farnsworth & Chambers Co., Inc.,** Box 74, Houston 1, Tex., LB **$1,449,134,** hospital, Walker Air Force Base, Inv. No. ENG-29-005-58-62, ROSWELL, N. M. U. S. Eng., P. O. Box 1538, Albuquerque, N. M. Bids Mar. 18. CD 1/23.

BUILDINGS—LB & CA

▲ **M. Mandel,** 1014 Plymouth Ave., Minneapolis, Minn., LB **$1,186,681** (14 bidders), general contract L shape, two 4 story connecting wings STUDENT RESIDENCE HALL, COLLEGEVILLE, MINN. St. John's University, Abbott B. Dworschak, Collegeville, Minn. Bids Mar. 28. CD 3/13.

▲ **H. B. Deal & Co. Inc.,** 5517 Manchester Ave., St. Louis 10, Mo., CA Est. **$1,000,000,** 1 story, part bsmnt., 96x285 ft. brick, steel, concrete, etc. BOWLING ALLEY BLDG., parking area, 7457 Hampton Ave., ST. LOUIS, MO. Grav-Hamp Corp., 6433 Chippewa St., St. Louis 9, Mo. Sommerich & Wood, 8135 Forsyth Blvd., Clayton 24, Mo., archts. CD 3/18, under Stan-Musial and Joe Garagiola, etc. as owners.

FAR WEST

HEAVY CONSTRUCTION—BA

▲†**Utah, Hill Air Force Base**—HANGAR—BA 4/20—U. S. Eng., 180 New Montgomery St., San Francisco, Calif., hangar for 7334d Troop Carriers Squadron. $1,125,000. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲† **Detweiler Brothers, Inc.,** Box 870, Twin Falls, Idaho. CA **$1,210,631,** expansion high-temperature hot water distri. sys. at Mountain Home Air Force Base, Inv. 58-23, MOUNTAIN HOME, IDAHO. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Mar. 18. CD 3/24, under LB.

▲† **Cement Corp.,** (Riverside Cement Co.) West Riverside, Calif. LB **$9,741,900** (3 bidders) 3 million bbl. bulk portland cement for Glen Canyon Dam and Power Plant, Colorado Storage Proj., DS 5023, ARIZONA. Bureau Reclamation, Dpt. Interior, Denver, Federal Center, Denver, Colo. Bids Mar. 27. CD 3/18.

▲ **NEVADA**—State Dpt. Hys., State Office Bldg., Carson City,
Wells-Stewart Constr. Co., Inc., Las Vegas, Nev. CA **$2,074,530** (11 bidders) constr. portion interstate hy. sys. approx. 9.922 mi. U. S. Hy. 91 between 24 mi. NE and 34 mi. NE of Las Vegas, Proj. No. I-IG-005-2 (15) Clark Co. Bids Mar. 27. CD 3/11.

▲ **Brunzell Constr. Co., Inc. of Nevada,** 1001 Mill St., Reno, Nev. LB **$1,196,332** (9 bidders) 1 story mezzanine, 42,000 sq. ft. steel frame, tilt up constr. air terminal bldg., RENO, NEV. City, Mayor and City Council, City Hall, Reno, Nev. Bids Mar. 24. CD 3/17.

▲† **U. S. Eng.,** 4735 E. Marginal Way, Seattle 4, Wash., cancelled bids to have been opened Mar. 27, enlarge and modify hydrant fueling sys., involving ten 50,000 gal. underground storage tanks and 14,000 ft. 4- to 10-in. jet fuel piping, Fairchild Air Force Base, ENG-45-108-58-70, SPOKANE, WASH. Over **$1,000,000.** Will re-advertise. CD 3/7.

▲ **OREGON and WASHINGTON**—State Hy. Dpt., Salem,
General Constr. Co., 4850 N. W. Front Ave., Portland, Ore., LB **$2,993,995,** (8 bidders) reconstr. Portland-Vancouver Interstate Bridge, Multnomah and Clark Counties. Bids Mar. 20, CD 2/14. (award awaits Wash. concurrence). CD 2/14.

▲ **OREGON-WASHINGTON**—State Hy. Dpt., Salem,
General Constr. Co., 4850 N. W. Front Av., Portland, Ore. CA **$2,993,995** (8 bidders) reconstr. Portland-Vancouver Interstate bridge, Multnomah and Clark Counties. Bids Mar. 20. CD 4/2, under LB.

▲† **Alwood Corp.,** 203 E. Broadway, Glendale, Calif. CA **$2,136,797** imprv. Big Dalton Wash Channel, San Dimas Wash to Los Angeles St., ENG-04-353-58-14, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 20. CD 3/24, under LB.

▲† **Clyde W. Wood & Sons,** 6900 Tujunga Ave., P. O. Box 620, North Hollywood, Calif. CA **$1,117,565** imprv. Upper Rio Hondo Channel, Lower Azusa Rd. to Valley Blvd., ENG-04-353-58-11. CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 6. CD 3/10, under LB.

▲† **MacDonald & Kruse,** 7540 Wheatland Ave., P.O. Box 306, Sun Valley, Calif. CA **$1,971,499,** imprv. Big Dalton Wash Channel Los Angeles St. to Walnut Creek Inlet Channel, ENG-04-353-58-12, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 13. CD 3/17, under LB.

BUILDINGS—LB & CA

▲ **Kaiser Engineers Div. Henry J. Kaiser Co.,** 1924 Broadway, Oakland 12, Calif. CA **$2,000,000** design and construct 63 x 51 ft. steel DIATOMACEIOUS EARTH PLANT, LOVELOCK, NEV. Eagle-Picher Co. American Bldg., Cincinnati, O.

▲ **Hoffman Constr. Co.,** 715 Southwest Columbia St., Portland, Ore., CA Est. **$5,000,000,** 8 story HOTEL, PORTLAND, ORE. Sheraton Corp., 212 Wood St., Pittsburgh, Pa. Bids Jan. 13. CD 1/10.

▲ **Stanford University, Bd. Trustees of Leland Stanford Junior University,** Encina Hall, Palo Alto, Calif. Separate Contracts. **$6,000,000** 1st stage CLINIC BLDG., LIBRARY and SCIENCE BLDG., EDWARDS BLDG. and altering REHABILITATION BLDG. in Medical Center, School of Medicine, PALO ALTO, CALIF. Bids Jan. 23. CD 12/16.
Carl N. Swenson, 1095 Stockton Ave., San Jose, Calif. CA excavation and concrete (Palo Alto, Calif.).

▲ **Cahill Constr. Co., Inc.,** 350 Sansome St., San Francisco, Calif. CA **$1,035,542** general constr. installing plumbing, electrical and mechanical work Silver Ave. JUNIOR HIGH SCHOOL, Job 1573, SAN FRANCISCO, CALIF. City and San Francisco Co., Dpt. P. Wks., City Hall, San Francisco, Calif. CD 3/21, under LB.

▲ **Maino Constr. Co.,** P.O. Box 709, San Luis Obispo, Calif. CA **$1,155,000,** 3 story addn. and three 1 story bldgs. Type I constr. to San Luis Obispo County General HOSPITAL, SAN LUIS OBISPO, CALIF. San Luis Obispo County, c/o County Clerk, Courthouse, San Luis Obispo, Calif. Bids Mar. 17. CD 3/26, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
April 30 Ontario
STREETS AND ROADS
April 22 British Columbia April 30 Ontario

BUILDINGS—LB & CA

▲ **Rush & Tompkins (Canada) Ltd.,** 10020-103rd St., Edmonton, Alta., LB **$1,839,960** (12 bidders) 4 story 50 x 300 ft. rein.-con. HOSPITAL with services and facilities for 200 beds, PRINCE GEORGE, B. C. Prince George Dist. Hospital, Prince George, B. C. Bids Mar. 19, CD 2/29.

▲ **Pyke & White Constr. Co.,** 6528 Victoria Dr., Vancouver, B. C., CA **$1,092,540,** low-rental HOUSING units, 41st and Nanaimo, VANCOUVER, B. C. Central Mortgage & Housing Corp., 2286 W. 12th St., Vancouver, B. C. Bids Mar. 18, awarded Mar. 26. CD 3/14.

▲ **English Electric Co. of Canada Ltd.,** 14 Strachan Ave., Toronto, Ont., CA turbine and generator contract, equipment for Thermal Power PLANT, EAST ST. JOHN, N. B. New Brunswick Power Commission, Fredericton, N. B. Total **$2,500,000,** H. G. Acres & Co. Ltd., 1259 Dorchester Rd., Niagara Falls, Ont. engrs. Awarded Mar. 1958; CD 1/22/55;
Combustion Engineering-Superheater Ltd., 1010 St. Catherine St. W., Montreal, Que., CA incl. boiler, equipment for Thermal Power PLANT, (East St. John, N. B.);
Foster Wheeler Ltd., 81 Eastchester St., St. Catherines, Ont., CA incl. condenser, equipment for Thermal Power PLANT, (East St. John N. B.)

▲ **Foundation Maritime Ltd.,** 1900 Sherbrooke St. W., Montreal, Que., CA Est. **$1,500,000,** new yard with modern BUILDINGS and services to accommodate 470 cars, new facilities will include a turntable, oil bunkers and sand tower, diesel shop and car repair bldg. a sandhouse and storage bldg., wheel storage facilities, CORNER BROOK, NEWFOUNDLAND. Canadian National Railways, D. W. Blair, regional ch. engr. CD 2/3.

▲ **Bourget Constr. Inc.,** 601 Cote Vertu Rd., St. Laurent, Montreal, Que., Owner Builds, **$1,500,000,** 100 unit HOUSING, on newly subdivided area, BEAUHARNOIS, QUE.

▲ **Jody Realty Ltd.,** c/o J. P. Turgeon, Lachenaie, Que., Owner Builds, **$5,000,000,** 500-unit, brick walls, HOUSING, concrete fdn., near Main Rd., LACHENAIE, QUE.

▲ **Pentagon Constr. Co. Ltd.,** 5005 Namur St., Montreal, Que., CA Est. **$3,000,000** (8 bidders) constr. foundations only for 14 story OFFICE addn., 153 x 202 ft. frontage on St. James St. and 130 ft. on Craig St., MONTREAL QUE. Bank of Montreal, Place D'Armes, Montreal, Que. Bids Mar. 5, awarded Mar. 26. CD 2/25.

▲ **Georges Goyette,** 10880 Esplanada Ave., Montreal, Que., Owner Builds, **$1,125,000,** HOUSING, 75 bungalows, concrete fdn., brick walls, near Main Rd., STE. ROSE, QUE. Emilien Bujold, 6746 Molson St., Montreal, Que., archt.

PUERTO RICO

HEAVY CONSTRUCTION—LB & CA

▲† **McDonough Constr. Co. of Florida & Clausses Lawrence,** 8247 S. Dixie Highway, Miami, Fla., (joint venture), LB **$3,356,711,** Alternate Bid, LB **$3,332,758** Base Bid, est. $4,158,024, runway and taxiway strengthening warmup pad and airfield lighting, Ramey Air Force Base, ENG-08-123-58-25, AGUADILLA, PUERTO RICO. U. S. A. Eng., Box P. O. 4970, Jacksonville, Fla. Bids Mar. 25. CD 2/7.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Brown & Root, Inc.,** Box No. 3, Houston, Tex., U. S. A. CA Est. **$3,500,000,** laying 13 mi. gas pipeline across floor of Lake Maracaibo (part will be 40 in. pipe, concrete coated with outside dimen. of 52 in.) line for Tia Juana Conserv. Plant No. 3, Tia Juana (Lake Maracaibo) VENEZUELA. Creole Petroleum Corp., Maracaibo, Venezuela.

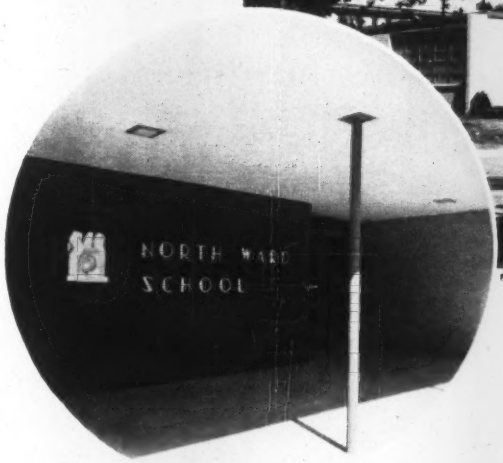
U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† **Pacific Constr. Co. Ltd. & Reed & Martin, Inc.,** 2826 Kaihikapua St., Honolulu, T. H. (joint venture) LB **$7,988,000** Base Bid, 600-unit family HOUSING, Eng. 54-605-58-132, HICKAM AIR FORCE BASE, HAWAII. Dpt. Air Force, Contracting Office, Bldg. T-243, Block 29, Hickam Air Force Base, Hawaii. Gordon W. Bradley, AIA., and Stanley F. S. Wong, 1220 Waimanu St., Honolulu, T. H., archts. Bids Mar. 25. CD 3/7.

(Proposal Advertisement see pp. 123 to 126)

North Ward School



PORTLAND CEMENT ASSOCIATION PHOTOS

For Low Cost Beauty

Architectural Concrete and Concrete Masonry made with Ideal Cement provide a BEST BUY for Schools

An economical dual application of concrete was developed for the construction of the North Ward Elementary School in Superior, Nebraska. On both the inside and outside of this handsome school building, concrete walls were left exposed.

Architectural concrete exterior walls provide an attractive, low-annual-cost exterior treatment for the entire building. On the inside, lightweight concrete masonry walls fulfill a load-bearing as well as a decorative purpose. The interior ceiling was constructed of exposed concrete filler-blocks to provide additional economies when used with the thin concrete roof slab.

This unique school building provides a total of 22,750 sq. ft. of space at a cost of $11.33 per sq. ft.—is an outstanding example of the way architectural concrete and concrete masonry provide beauty, economy, and long life with minimum maintenance. Ideal Cement was used exclusively for all concrete and concrete masonry units in North Ward Elementary School.

PORTLAND IDEAL CEMENT

IDEAL CEMENT COMPANY

DENVER, COLORADO

15 Plants and 4 Terminals Serving
Some of the Most Rapidly Growing Areas of the Nation

This new "Jimmy" Diesel doesn't care what's tied to its tail!

New GM "71E" Diesel—available for any make truck or bus—can cut gasoline engine operating costs in half!

This newest "Jimmy" Diesel not only doesn't care what's tied to its tail—it's engineered to outperform any other engine on the road.

First, it utilizes the weight-saving, space-saving two-cycle design which General Motors introduced 20 years ago to let you haul more pay load and less dead weight.

Lower fuel and maintenance costs

Next, this new "71E" engine has *four* exhaust valves per cylinder and a 38% increase in air-inlet area for the freest "breathing" known. This, plus new injectors, assures *better combustion—maximum power from minimum fuel—smoke-free exhaust.*

Highway haulers who have been testing the "71E" engine report it gives them lower fuel and maintenance costs than any other Diesel. Users who have switched over from gasoline engines in their trucks *have cut operating costs as much as 50%!*

See your GM Diesel distributor about repowering your present equipment. When you're in the market for new trucks, ask for this great new GM "71E"* engine. And if the truck you choose isn't immediately available with a "Jimmy," turn your truck over to the GM Diesel distributor for a "71E" installation. *You'll be money ahead!*

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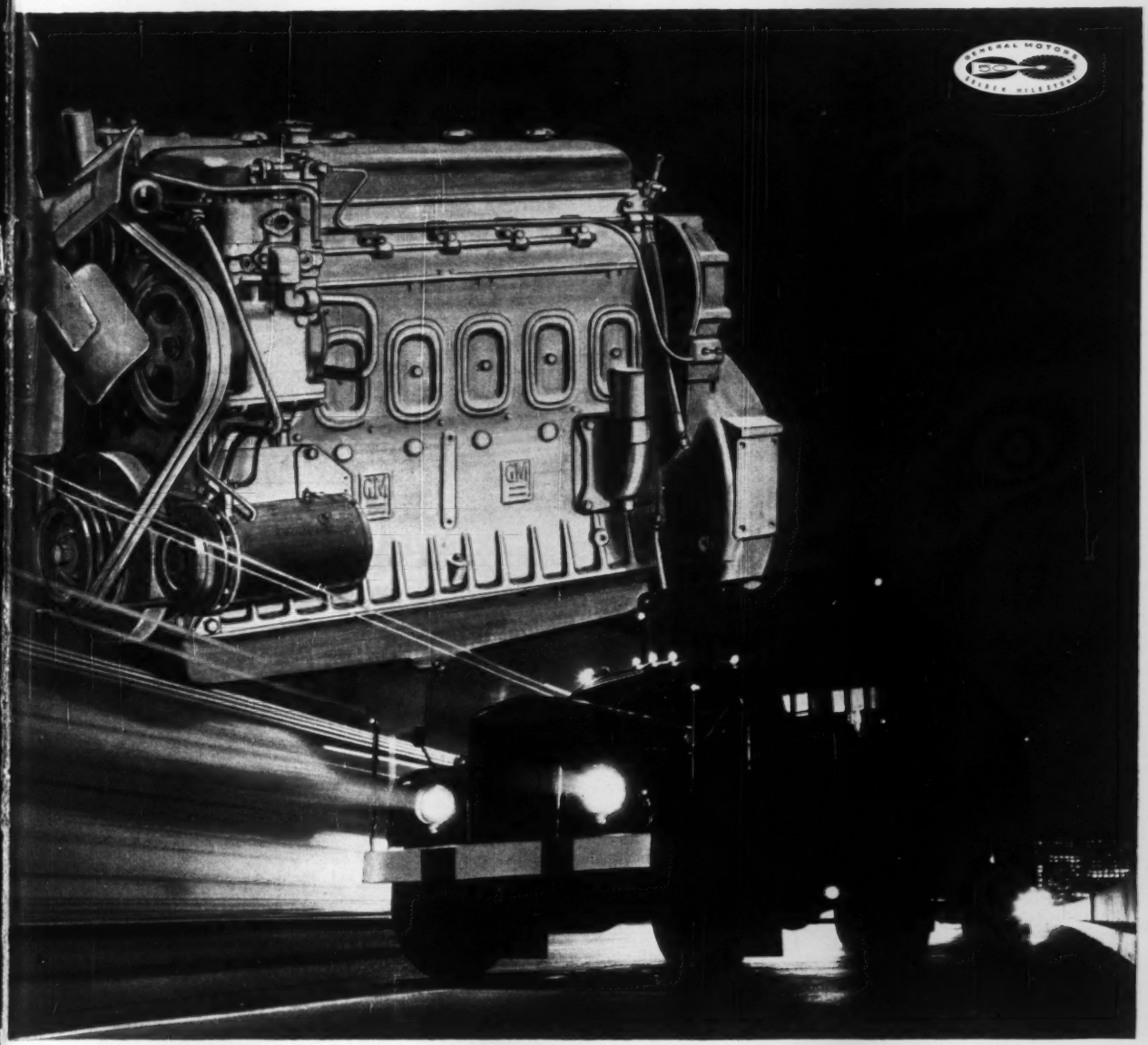
DETROIT DIESEL POWER



**Truck and bus engines: "4-71E"—140 h.p.; "6-71E"—210 h.p. New Turbopower models utilize the energy of exhaust gases to deliver even higher power: "4-71T"—171 h.p.; "6-71T"—236 h.p.*

Write for illustrated brochure,
"A New Line of GM Diesel Engines For Trucks."

Now—more than ever—*it pays to standardize on GM Diesels*—available in 1485 applications of power equipment built by more than 175 manufacturers. Parts and Service *Worldwide.*

What's the cost of a Diesel?

The initial cost of a Diesel is quite understandably more than a gasoline engine because its higher compression ratio requires much greater precision and ruggedness. But the Diesel more than pays for itself in time savings, fuel economy and reduced maintenance and longer life. Due to simpler 2-cycle design and lower-cost interchangeable parts, *a GM Diesel gives you lowest costs over the entire life of the engine.* Try one—see for yourself!

Detroit Diesel Engine Division of General Motors, Detroit 28, Michigan

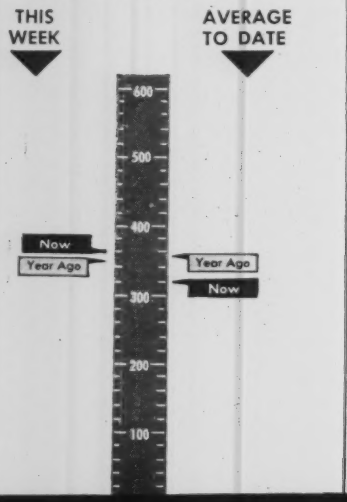
Regional Offices: New York, Atlanta, Detroit, Chicago, Dallas, San Francisco

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario • *Single Engines—30 to 300 H.P.* • *Multiple Units—Up to 893 H.P.*

Construction Scoreboard

ACTIVITY THIS WEEK

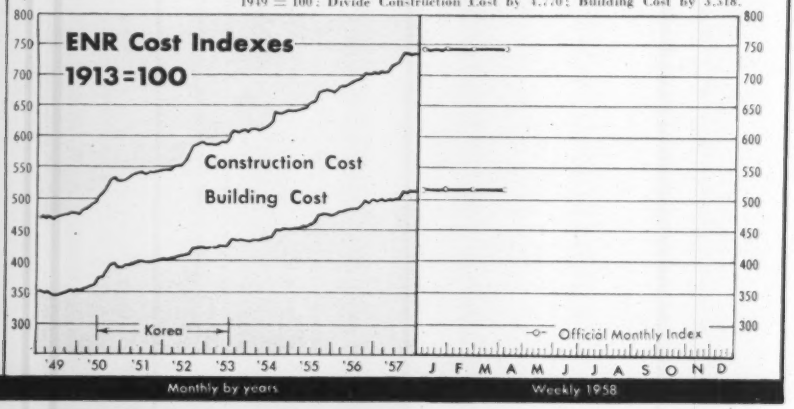
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Apr. 3 1958	% of Change from Feb. 27 1958	% of Change from Mar. 28 1957
Construction Cost	745.78	+0.2	+5.1
Building Cost	516.61	+0.1	+3.0

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 15 wks 1958	Chge '57-'58 %
	millions		
All Heavy Constr.	$354.6	$4,784.4	−8
Private	171.7	2,308.7	−4
Public	182.9	2,475.7	−12
State & Municipal	142.4	1,955.9	−1
Federal	40.5	519.8	−37
By Type of Work			
Public			
Waterworks	6.4	70.1	−27
Sewerage	8.0	159.3	+32
Bridges*	12.3	132.3	−34
Highways	59.7	748.4	−10
Earthwork, Waterways	17.8	187.3	−43
Buildings, Excl. Housing	45.6	668.6	+9
Housing	3.3	303.6	+46
Unclassified	29.9	206.1	−48
Private			
Mass Housing	88.0	1,042.5	+26
Commercial	22.5	517.0	+7
Industrial	41.2	608.5	−33
Unclassified	19.9	140.7	−16

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Apr. 3 1958	Cum. 14 wks 1958	Chge '57-'58 %
	millions		
Corporate Securities	$30.8	$1,508.6	−20
State and Municipal:			
All Except Housing	150.0	2,004.2	+31
Housing	...	20.3	−51
Federal Loans	2.2	58.3	+49
Federal Aid	...	....	...
Total Nonfederal	$183.0	$3,591.4	+2
Federal Appropriations:			
Projects in U. S.	...	$520.0	...
Outside U. S.	...	....	...
Total New Capital	$183.0	$4,111.4	+17

WAGE RATES, 20-cities average

	Apr. 1958	% Change from Mar. 1958	% Change from Apr. 1957
Common	$2.389	+0.3	+7.4
Skilled (average 3 trades)	3.636	+0.2	+4.9
Bricklayers	3.885	+0.1	+4.1
Structural Ironworkers	3.626	+0.2	+4.9
Carpenters	3.375	+0.4	+5.1
Equipment operators (average three types)	3.302	+0.5	+6.3

MATERIAL PRICES, 20-Cities average

Structural Steel (average 3 mills), per cut	$5.275	0	+5.5
Lumber, 2x4 Fir, per M fbm	111.38	+0.1	−3.5
Lumber, 2x4 Pine, per M fbm	98.95	−0.5	−2.5
Cement, bulk, per bbl	3.967	+0.1	+1.6
Sand, per ton	2.497	0	+1.9
Ready-mixed concrete, per cu yd	13.848	+0.1	+2.4
Gypsum sheathing, ½"x2'x8', per Msf*	62.745	+0.5	−0.4
Fiber board sheathing, ½" sq. ed., per Msf*	71.320	−0.7	−0.4
Mineral wool insulation, 3' batts, per Msf*	71.010	0	−1.0
Crushed stone, 1½", per ton, CL	2.838	0	+0.9
Concrete blocks, sand/gravel, 8"x8"x16", each*	.229	0	+0.9
	Mar. 1958	Feb. 1958	Mar. 1957
Brick, common per M	$38.000	−0.4	+1.6
Lime, hydrated finishing, per ton, CL	38.466	+4.5	+6.6
Structural clay tile, 3x12x12", per M, 2,000 up*	184.473	0	+3.2
Vitrified clay sewer pipe, std 12", per ft	1.260	0	−4.0
Concrete sewer pipe, 12", per ft	1.241	0	+8.3

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1957	1913=100	1949=100	1913=100	1949=100	1913=100	1949=100
Apr.	709.30	148.69	501.37	142.52	564	163
May	715.70	150.04	503.01	142.99	553	160
Jun	721.36	151.22	504.17	143.32	588	170
Jul.	724.15	151.81	506.62	144.01	587	170
Aug.	738.63	154.84	516.90	146.93	528	153
Sep.	737.78	154.66	516.12	146.71	466	135
Oct	737.14	154.53	516.78	146.90	506	146
Nov	737.43	154.59	516.81	146.91	457	132
Dec	738.08	154.73	516.27	146.76	357	103
1957 Average	**723.85**	**151.74**	**508.67**	**144.59**	**517**	**150**
1958						
Jan	743.44	155.85	516.79	146.90	368	106
Feb	743.77	155.93	515.78	146.61	446	129
Mar	744.41	156.06	516.09	146.69	520	150
Apr.	745.78	156.34	516.61	146.84	...	...

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Apartment doors at the lowest installed cost!

Concealed within the sleek seamless beauty of this new Fenestra® Hollow Metal Flush Door is a rigid, rugged, welded structure that gives the door the strength to withstand years of tenant abuse. It's Fenestra's exclusive multi-rib reinforcement!

And, in addition to beauty and durability, you get the lowest installed cost because:

1. You buy a *complete package*—door, frame, hardware, completely machined at the factory to eliminate on-the-job cutting and fitting.
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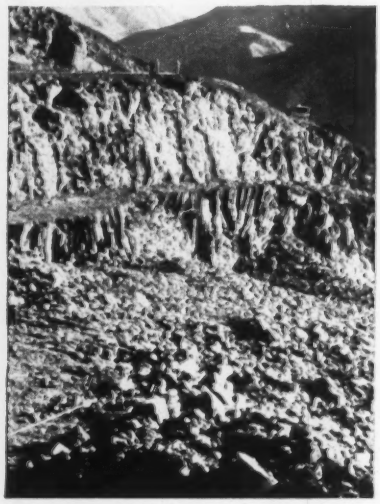
NEW RESULTS OF MONSANTO RESEARCH IN USE OF AMMONIUM NITRATE AS AN EXPLOSIVE

Typical shot with Monsanto's new kind of prilled NH_4NO_3

View of area involved in the blast. Shot was made in heavy columnar basalt at dam site. Used as an explosive: a new, top-quality, prilled NH_4NO_3 that Monsanto research developed to give you optimum savings, safety, speed and ease of handling.

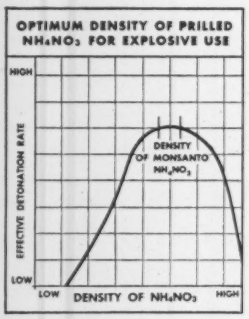
View at time of detonation. The system of detonation recommended by Monsanto, in conjunction with Monsanto Ammonium Nitrate, will yield equivalent pound-for-pound results with 60% gelatin dynamite at one-fourth the cost.

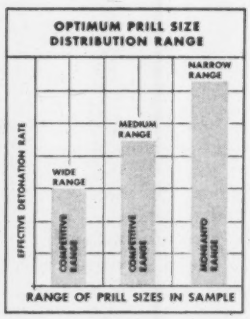


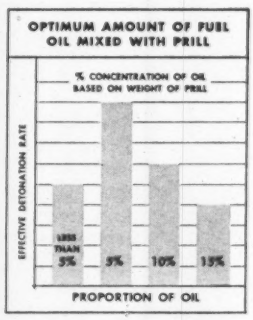
Results of blast. The powder factor in the shot above was 0.4 lbs. per cubic yard. Breakage of rock was considered ideal by contractor. Monsanto's experienced staff can give you complete technical service. Just phone Monsanto.

Photos courtesy of MORRISON-KNUDSEN COMPANY, INC.

Monsanto Ammonium Nitrate is now produced according to the specifications determined by these findings of Monsanto research. Result: more effective blast at greater savings. Monsanto is the world's largest manufacturer of prilled ammonium nitrate—and leader in developing the use of NH_4NO_3 as an explosive for open work. Request report presenting latest research findings.







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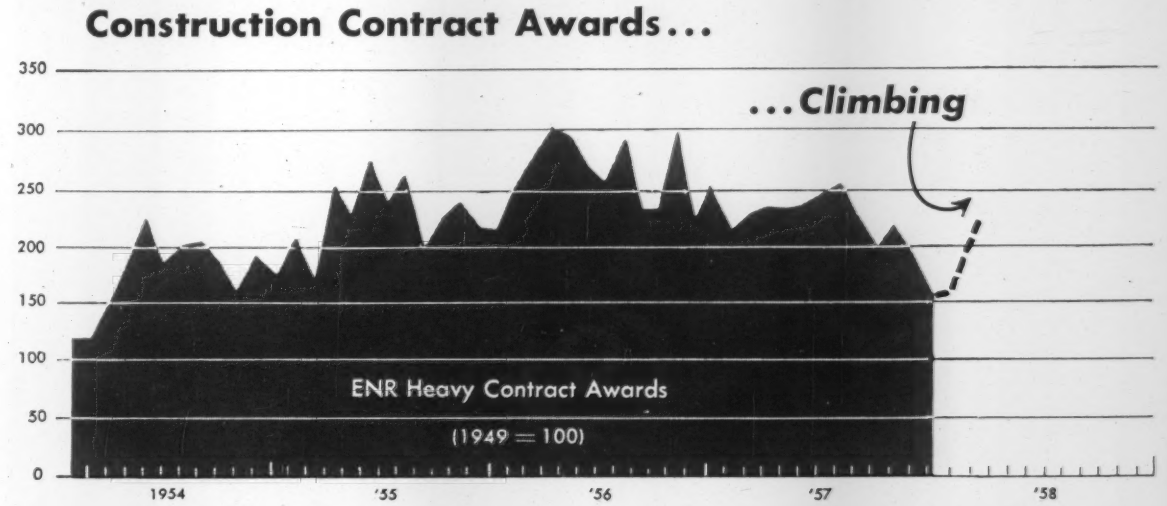


Construction Contract Recession Ended

March went out like a lion so far as the construction industry was concerned with the month roaring to a total of $1.4 billion in heavy construction contract awards. This was a 19% increase over February and, significantly enough, was the third consecutive month-to-month increase.

The March total—only 5% below the same month of last year—also affirmed earlier signals that the end of the 18 month slide in heavy construction contract awards came in December. The upturn was noted in January, although it was only at best 4% above December. But in February, total contract awards spurted to show a 17% increase over January.

The strength shown in March that served to push awards to within 5% of March 1957, also contrasts sharply with the two preceding months on a year-ago basis. Although January awards were higher than those of December, they were 24% below January 1957 and February contracts were down 21% from February 1957 contracts.

• **A stronger outlook**—For the first three months of this year, contractors took on a total of $3.8 billion in new business. Though this is 16% below 1957's first quarter and 32% under the first quarter record established in 1956, it compares favorably with the first three months of the years 1950 to 1954. In addition, the first quarter tally is 45% above the same period of 1954, which was the low point of the short-lived 1953-1954 "recession" in heavy construction contracts.

The heaviest drops in the 1957-1958 decline are in the federal contracts sector, which is down 40% and private awards, down 18%. However, state and local public works volume is only 3% under last year—a gap that shortly will be eliminated when public awards shift into high gear in the April-June period.

Four types of work are running ahead of last year by 6% to 54%. The healthiest increase—54%—was registered by housing in the public category. Most of this increase was accounted for by Capehart units.

Sewerage, also in the public works group, was second on the "higher" list with a hike of 39% in contracts.

The private category also was represented, and in this grouping, commercial contract awards scored a 15% boost. The smallest increase registered was 6% and this in the public grouping, which was buildings, excluding housing.

Other major types of heavy construction are behind.

• **The brighter outlook**—However, contract awards during the coming nine months are expected to top the corresponding total awarded in 1957, so the grand total for the full year of 1958 will lag behind 1957 by only about 2%, as forecast (ENR Feb. 13, p. 49).

The burden of this accomplishment, however, will be on state and municipal work for the rest of this year. Plans for letting awards this year indicate a big boost in highway projects. Moreover, new work also will be coming along at the municipal level, according to a survey (ENR Apr. 3, p. 109), which showed nearly all of 60 cities and key economic areas intend to maintain or accelerate their contracting schedules. A majority of these cities planned to award at least as much work this year as they did last year, and several reported intentions to place a larger volume of contracts this year.

• **Private work firming up**—Although all but one of the work groups in private work are carrying a minus sign, there are strong indications that this entire category is strengthening. The commercial trend is obvious, followed by cheerful indications in the mass private housing group.

A closer analysis perhaps is warranted in some groupings, because it will provide the detailed background upon which the predicted upturn is based.

• **Private**—The first quarter of this year was well below the corresponding months of 1951, '53, '55 and '57 and was less than half of the first quarter record set in 1956. However, the decline is definitely tapering off. The first quarter total was less than $100 million under the fourth quarter of 1957 and that fourth quarter was nearly $300 million below the third quarter. The new strength being shown in mass housing and commercial work, is off-

setting weakness in industrial building. But, industrial building has just about bottomed out, showing little change in the rate of awards during the past five months, except for the spurt in February. Though first quarter industrial awards were only half the amount of a year ago volume, the gap should narrowed to much less than this in the months ahead.

Mass housing narrowed the 1957-1958 gap in February and March. February was slightly below last year, but March jumped 10% ahead of the same month last year. Moreover, April volume should be more than double that of April 1957, because the strengthening of housing awards will continue. Already, housing has received a big assist from the new Levittown, N. J. project, which has an estimated cost of about $250 million.

• **Public works**—Sewerage contracts show a boom in this category. First quarter volume topped a year ago—the seventh consecutive quarter to top the corresponding year-ago volume. However, waterworks fell to its lowest quarterly volume in nearly three years, but the prospects are good for a much improved showing in the months ahead.

Public buildings exclusive of housing continue to roll upwards. Quarterly volume gain topped the year-ago volume and it was the ninth consecutive time this has occurred.

Earthwork-dams-waterways contracts have dropped most sharply of all major types of public works when compared with one year ago. This is due partly to the lack of extremely large contracts awarded during 1957's first quarter such as Priest Rapids Dam. This year, however, did see the nearly $100 million contract awarded for the Lewiston Dam by the New York State Power Authority. It is only a sample of the total volume of awards that can be expected to come from this project during 1958. ENR anticipates another $300 million to $400 million in contract awards this year for the Niagara power project.

Highways and bridge contracts are off to a slow start this year. The first quarter was the first in more than two years in which awards failed to top the year-ago rate. However, plans of state highway departments show a record volume of highway contracts tentatively scheduled for awarding this year (see page 21). These plans point to a sharp hike in awards during the next nine months, an increase that may push total highway and bridge awards above the $4.9 billion mark.

• **State rankings**—During this year's first quarter, New York was the leader in the volume of contracts awarded. With $485.5 million sent to contract, the state claimed 12.7% of all new work in the country. Moreover, it came within 5% of the volume let in the same months of last year.

California ranked second with awards of $392.7 million, 10.3% of the national total. The figure, however, was 29% below that of the first quarter of 1957. Ohio was next with $327.2 million in awards, 11% more than for the same months last year. Texas was fourth with $297.5 million, an increase of 1% over the 1957 January-March period.

For the month of March, California took top spot for both private and public construction contracts. Awards totaled $180.4 million, a gain of 12% over one year ago. Commercial building alone accounted for close to one-third of all the awards. Good support was received from nonresidential public buildings and streets and roads.

New York ranked second for the month, but its $125.6 million in contract awards plummeted 35% below March 1957 despite a generous amount of private housing and nonresidential public building contracts.

Ohio was third in both public and private construction activity in March, with road contracts boosting public activity and private housing accounting for most of the private work put under contract.

Price Stability Ends; Cost Indexes Move Up

A few increases in materials prices and wage rates ended two months of stability noted in construction costs. ENR's 20 cities Construction Cost Index moves up more than one point to an April value of 745.71, compared with 744.41 in March.

The ENR Building Cost Index edges up to 516.61 this month as against 516.09 for March. Both indexes are based on 1913 = 100.

Although the indexes had increased

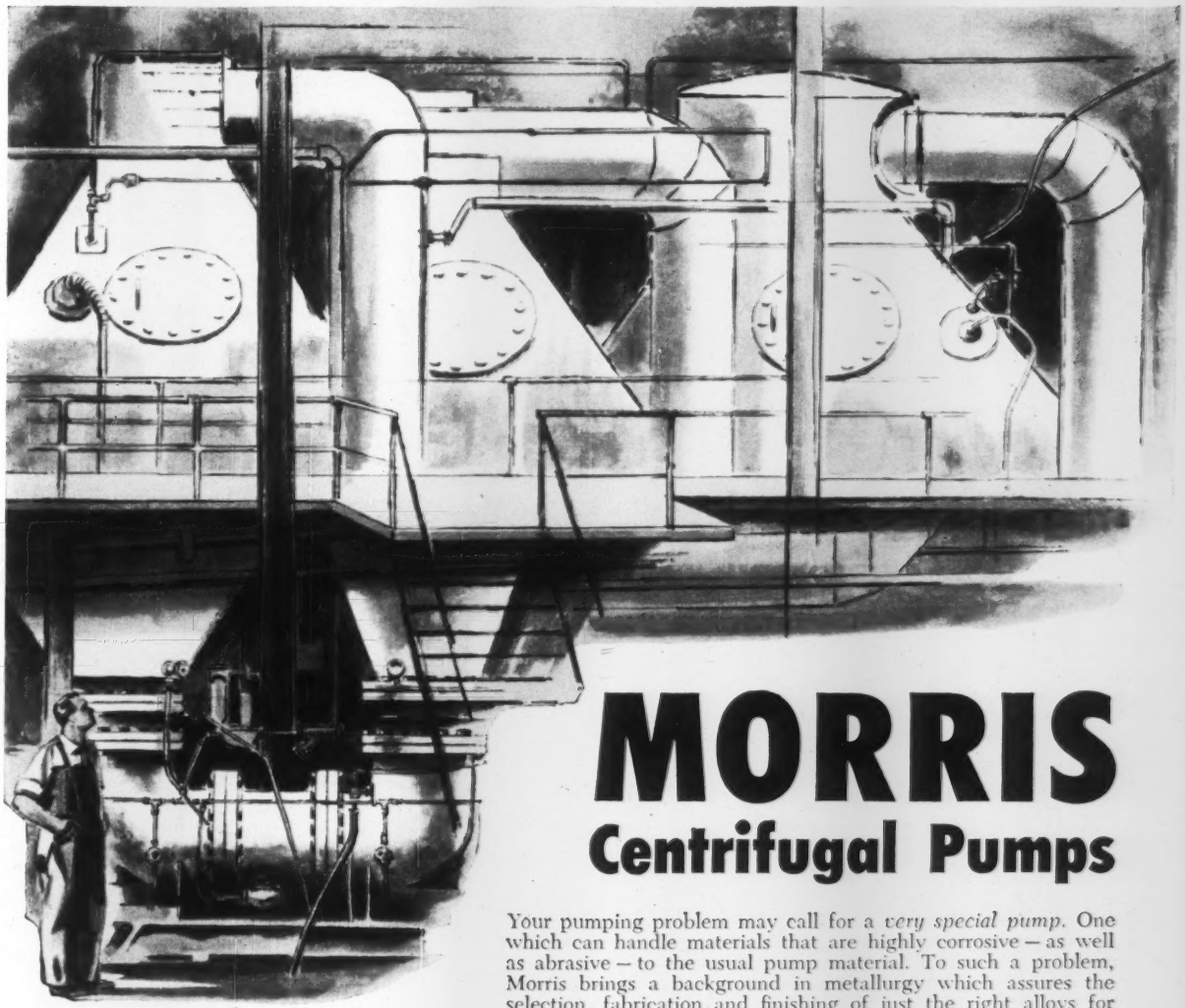
Engineering Construction Contracts—March '58

ENGINEERING NEWS-RECORD *reports continental U. S. Construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks—Thousands of Dollars (000 Omitted)

	March, 1958							U. S. Cumulative Three Months		% Change	Canada March
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1958	1957	'57 to '58	1958
Public Works											
Waterworks	3,087	3,117	3,340	1,580	6,842	4,640	**22,606**	**57,519**	87,498	−34	779
Sewerage	3,725	14,899	5,534	14,751	6,950	7,071	**52,930**	**145,011**	104,036	+39	2,525
Bridges	127	1,453	4,529	5,660	14,898	6,767	**33,434**	**101,607**	169,838	−41	2,322
Earthwork and waterways	1,259	306	1,060	...	22,430	9,433	**34,488**	**166,276**	313,315	−47	619
Streets and roads	18,635	39,420	46,879	54,756	57,320	38,261	**255,271**	**619,342**	700,813	−12	5,261
Public buildings, residential	8,977	27,140	3,184	8,573	11,931	19,693	**79,498**	**276,471**	179,368	+54	2,905
Other public buildings	12,528	52,663	32,565	35,153	46,733	50,531	**230,173**	**570,211**	537,251	+ 6	13,905
Unclassified	6,707	6,486	17,758	857	16,173	23,715	**71,696**	**142,982**	327,800	−56	4,686
Total public	**55,045**	**145,484**	**114,849**	**121,330**	**183,277**	**160,111**	**780,096**	**2,079,419**	**2,419,919**	**−16**	**33,002**
Federal government (included in above classifications)	13,847	17,500	29,272	18,130	52,646	29,317	**160,712**	**424,297**	710,626	−40	8,823
Private											
Bridges	...	...	...	...	...	...	...	...	1,220	−100	...
Industrial buildings	1,457	17,765	16,036	23,944	48,347	25,243	**132,792**	**535,728**	854,201	−37	39,725
Mass housing	16,586	117,525	9,553	79,842	34,507	17,247	**275,260**	**628,313**	723,662	−13	29,353
Commercial buildings	13,201	36,294	18,647	36,262	25,597	63,962	**193,963**	**471,064**	407,927	+15	25,645
Unclassified	535	190	885	980	10,419	2,571	**15,580**	**116,771**	160,398	−27	10,618
Total private	**31,779**	**171,774**	**45,121**	**141,028**	**118,870**	**109,023**	**617,595**	**1,751,876**	**2,147,408**	**−18**	**105,341**
Total Engineering Construction:											
March, 1958—4 weeks	**86,824**	**317,258**	**159,970**	**262,358**	**302,147**	**269,134**	**1,397,691**	...	...	...	**138,343**
February, 1958—4 weeks	72,848	278,961	121,270	290,798	222,416	188,498	**1,174,791**	...	...	...	71,008
March, 1957—4 weeks	62,443	414,867	194,090	220,811	351,382	223,982	**1,467,575**	...	...	...	121,959
Three Months—1958	**227,931**	**968,779**	**506,146**	**765,948**	**770,356**	**592,135**	...	**3,831,295**	...	**−16**	**319,423**
Three Months—1957	259,685	1,092,312	584,327	917,003	821,860	892,140	...	...	4,567,327	...	392,465
% Change '57 to '58	−12	−11	−13	−16	−6	−34	...	...	...	...	−19

For pumping abrasive and corrosive materials



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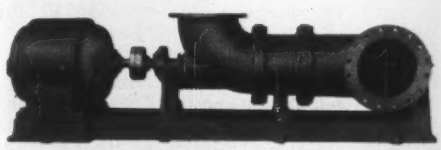

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slightly in February and March. April boosts are the largest since January. However, the year-to-year rate of advance holds steady. The Construction Cost Index is now 5.1% above a year ago, the same 12 months rise as recorded for March. The Building Cost Index is 3.0% higher than April 1957, also about the same as March's year-to-year increase.

The advances in the April indexes are due mostly to wage increases provided for by existing contracts of trades in Baltimore and Kansas City. Common laborers on both building and heavy construction in Baltimore received a 2½ cent increase effective April 1, bringing the hourly wage rate to $2.00. Carpenters in Baltimore received a boost of 7½ cents an hour, which pushed their new wage rate to $3.20 an hour.

Kansas City common laborers on both building and heavy construction obtained a 10 cent increase effective April 1. Bricklayers also received a 10 cent hourly advance, while carpenters wages are up 20 cents an hour. Structural ironworkers wage rates rose 15 cents an hour.

Price rises in lumber and cement also contributed to the jumps in the indexes. In San Francisco, Douglas fir 2x4's are up $4.00 per Mfbm to $80.000. Dallas bulk cement rose 10 cents per bbl to $3.25.

Upturn Spells "More Business"

Contract awards climb heralds larger order inflow to suppliers; steel fabricators note booking boost

Construction materials and machinery manufacturers and distributors now have good reason to smile again. The reversal of the long downtrend in heavy construction contract awards automatically means more business, because history is repeating itself. In the second quarter of 1954, ENR contracts pointed the way out of the late 1953 and early 1954 slump in orders for many materials and lines of machinery. Now the February and March recovery in contract trends again is heralding a brighter outlook for suppliers' sales.

In fact, this improvement in the new business picture has not gone unnoticed. Caterpillar Tractor recently recalled some of its workers and also announced some production lines will return to a full workweek.

One of the most sensitive indicators of the trend in construction demand—bookings of fabricated structural steel—has started to recover from the slump which saw 1957 orders drop 31% below the record established in 1956. Though January and February bookings are 42% below the first two months of 1957, both of this year's first two months saw bookings—or demand—perk up. January, for example, rose 28% above the December rate which was the low for 1957. And February marked up a 14% gain over January.

Of course, shipments by structural steel fabricators compare much more favorably with a year ago—the two months total in 1958 being down only 2% from 1957. This results because the 1957 drop in bookings was cushioned by huge order-backlogs. However, backlogs have dwindled rapidly during the past year, so that shipments declined for the fourth consecutive month in February, with that month's tonnage being off 11% from February 1957.

• Bookings to firm up—But as contracts maintain—and add to their recent gains—the fabricators can expect bookings to continue to firm up, thus narrowing some of the gap between current shipments and the level of new orders.

Though the decline in shipments of fabricated structurals perhaps will continue for a few months, an end of the slide is being prepared by rising bookings. Also, because of faster deliveries on new orders—and also a sharp drop in the bid prices fabricators and erectors are quoting on new jobs—shipments may quickly see a halt in their decline.

Shipments of reinforcing bars also appear to have bottomed out in December when monthly tonnage hit the lowest point in recent years, except for months when strikes halted mill production.

The American Iron and Steel Institute reported that January shipments of reinforcing bars rose to 118,203 tons, a climb of 18 % over the December 1957 low. Though February reinforcing bar shipments will be down slightly from January, all signs show that they still will be above the December low-mark. But, like fabricated structural steel, the uptrend is not enough to pull steel shipments up to the record tonnages of a year ago. The rate of bar shipments, however, is down only about half the January-February volume of 1957.

• Wholesale orders may strengthen—Sales of wholesalers in January still were showing the effect of the 1957 construction contract decline, particularly in housing. Sales of lumber and construction materials dealers were 10% lower than in January 1957. Distributors showed an 8% drop and hardware wholesalers experienced a 10% decline from sales in January 1957. However, this picture could change by the second quarter, perhaps before. Increases in housing, commercial building and public works should help build up the flow of orders at both wholesaler and manufacturer supply points.

• Cement shipments climb—Cement shipments from mills reflected a strengthening demand in January and according to the U. S. Bureau of Mines they set a record for a January month with a total of 13.6 million bbl. This was 15% higher than the low volume of shipments a year ago. This is a significant development, because all but two months of last year, saw cement shipments fall behind the rate of 1956. June and July were below the same months of 1956 because of the cement strike in June 1957, therefore the August and September months climbed over the same months of 1956 to make up for the lost output during the strike.

This current sign of improvement in cement demand also is evident in contracts for concrete paving which leaped sharply last December to the biggest monthly total for the post-war period. According to the Portland Cement Association 11.4 million sq yd of paving were contracted for. However there was a setback in January and February of this year reflecting a temporary lull in highway construction awards and paving contracts were off 30% from 1957.

Business Briefs . . .

• Raymond rechristened—Stockholders of Raymond Concrete Pile Co., Inc., of New York City, last week approved a new name for the company—Raymond International, Inc. George F. Ferris, president, said the former name was restrictive in nature. Although the company is known in this country as a foundation specialist, it operates abroad as a general contractor, undertaking all types of construction.

• Construction plans unchanged—Allstate Insurance Co. reports that the current business recession will have no effect on its construction and expansion program. During 1958, the company will spend nearly $10 million for new facilities. Already started is a $1.5 million office building in Skokie, Ill., to house the company's Illinois regional and midwest zone offices.

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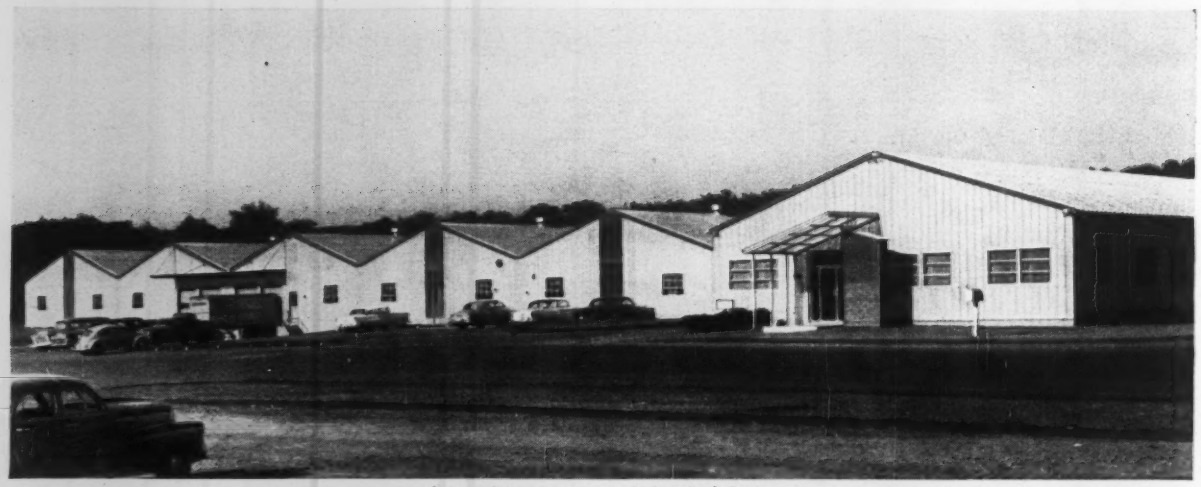

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A large metal fabricating plant in Toronto, Canada

A shoe factory in Pittsfield, Mass.

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Jobless Insurance Proposals

Objections to federal interference and to limited scope of Administration's proposal voiced at Capitol

Labor's legislative program for combatting the recession was turned upside down by Congress last week. Attention was focused on long-range remedies, such as stimulants to homebuilding and highway construction, while prospects dimmed for quick federal action on jobless insurance benefits and tax relief for which the AFL-CIO had urged priority because of the immediate effect they would have on the nation's economy.

Slippage of the unemployment insurance issue became apparent as the House Ways and Means Committee tapped the minds of labor, management and public officials and found a wide difference of opinion on how the problem should be approached. Strongest deterrents to immediate action at the federal level appeared to be employer resistance to higher payroll taxes, a zealous interest in states' rights and a rather fuzzy picture of the present employment situation, which continues to be more critical than any since 1941.

Present effect is to leave emergency remedial action up to the states. But only a few have acted. Delaware has upped its maximum weekly unemployment benefits from $35 to $40. New York has amended its insurance system to give eligible idle workers about one-half their average weekly wages up to a new maximum weekly benefit of $45. (The New York increase is retroactive to July 1 and will immediately pump an estimated $8 million into the state's economy.)

• **Pivot**—Conflicting views on methods of approach were spotlighted last week by an Administration proposal to make federal funds available to the states to continue jobless benefits to those who have exhausted their state benefits. Duration of these extra payments would be one-half of a state's regular benefit duration period. (States that now pay for 26 weeks, for example, could extend payments for an additional 13 weeks).

The federal government would be reimbursed, under the proposal, by an increase in payroll taxes four years after the extended benefits program ends. States wishing to avoid the extra tax could pay the loans out of general funds or by transfers from their unemployment trust fund accounts.

According to Labor Secretary Mitchell, the plan is designed as a temporary measure and is to be superimposed on the present system with "the least possible violence" to state programs. President Eisenhower called it "in no sense a substitute" for the basic reforms he has urged in state programs, such as extended coverage, higher benefits and longer durations. (These he would leave to state initiative.)

• **Criticism**—While some committee members had their own reservations about the proposal, strong criticism came from the National Association of Manufacturers. It called it "one of the most fantastic proposals of all times."

Principal objection was that the measure could force a state to borrow money for a purpose not authorized by state law and then compel it to pay back the money by special appropriation or an additional tax levy. The tax, said the NAM, would hit only a portion of the public, namely employers who already finance the jobless insurance system.

Taking issue with the NAM and other witnesses who urged the matter be left up to the states, the AFL-CIO presented a plea for modernization of state programs through a new system of minimum federal standards.

It said it would support any emergency legislation to help the unemployed pending enactment of basic improvements but declared it "cannot accept the limited objectives of emergency legislation as a substitute" for such improvements. Failure of the states to improve their systems in the past, it believes, now makes federal action necessary.

• **Problem**—During the week, however, the committee found it easier to obtain ideas than facts. Critical area is the current status of employment.

The U. S. Labor Department declined to release its new employment figures until this week. Secretary Mitchell predicted little change from the February unemployment figure of 5,173,000. Another Labor Department official, however, thought the present figure might be 200,000 higher.

But whatever estimate is used, there appeared to be little controversy over these general conclusions which point up the problem faced by the House committee:

• Unemployment still stands at a post-war high and shows no significant signs of declining.

• Only six out of 10 unemployed persons are covered by unemployment insurance.

• Under present state systems, jobless insurance is returning to the economy less than 17% of the total wages lost through unemployment.

• An estimated 187,500 persons last month exhausted their state benefits.

• The Administration's proposal would bring no relief to the uninsured unemployed or to the insured but ineligible unemployed and would become effective only to the extent the right to state benefits is exhausted.

Rackets Committee

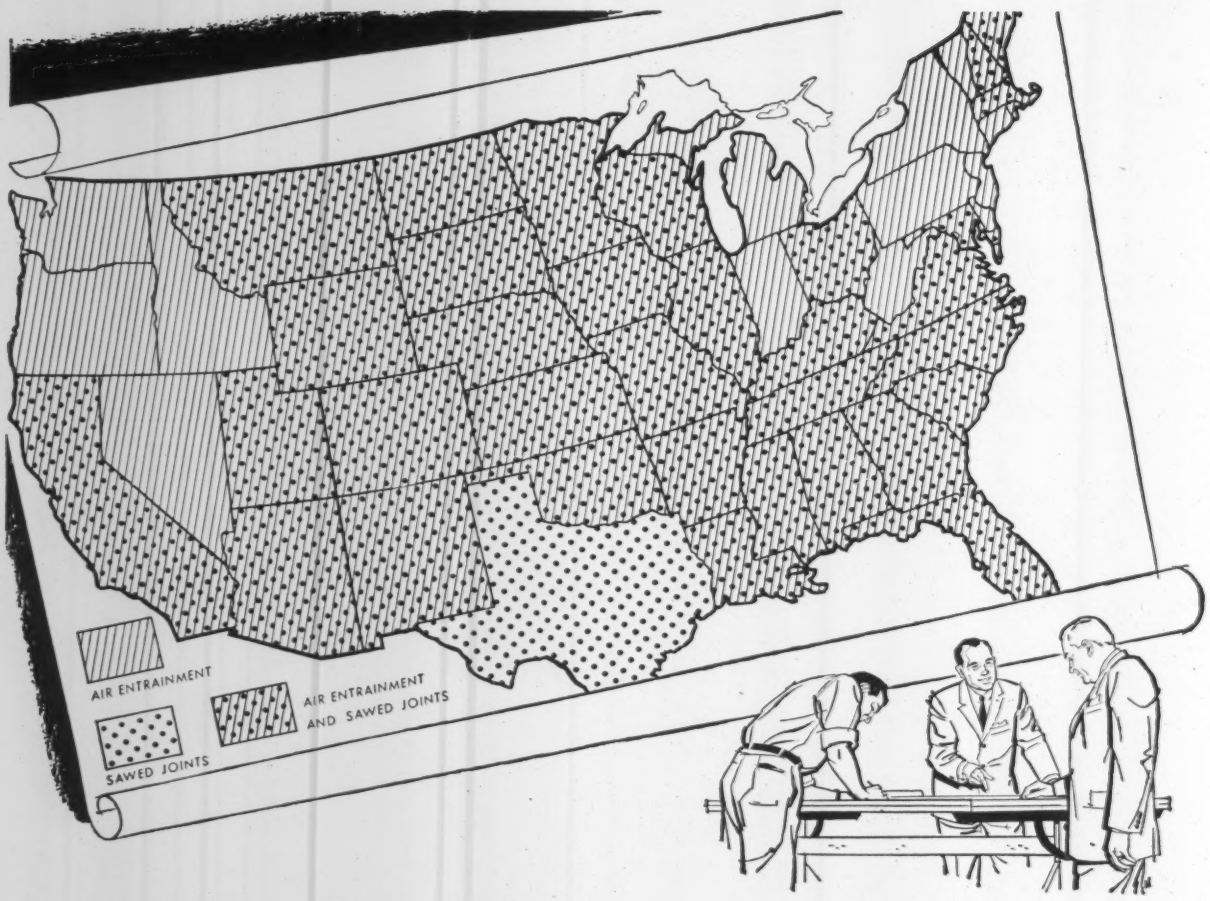
Senator McNamara resigns after censuring committee

Sen. Pat McNamara of Michigan resigned last week from the Senate Select Committee on Improper Activities in the Labor or Management Field. His resignation is effective April 15 unless his successor is appointed before then.

A former pipefitter and president of a local union for 25 years, Senator McNamara is one of the eight members of the McClellan Committee, which has spent the bulk of its time on unions in the construction industry. In two cases—teamsters and operating engineers—its disclosures were largely responsible for significant personnel and policy changes within the unions.

In deciding to quit the committee, Senator McNamara said he has "more important things to do, comparatively, than waste my time on that committee."

His dissatisfaction with the commit-



48 state highway departments list new-type concrete in their specifications

Nationwide, state highway departments now have specifications to cover one or more advances that make today's concrete new-type. More and more states *require* design features like air entrainment and sawed joints for *all* new concrete construction—pavement and structures.

Through your work, you are keenly aware of these advances. You may have been active in their development.

But what about the *public?* The average driver doesn't yet realize or appreciate what these advances mean to him in terms of increased comfort and safety. And that's where PCA's new national advertising takes a hand . . . to help you tell this story of today's new, smoother-riding concrete to the people who drive your highways.

The support of an informed public can help speed the big highway job . . . especially in the planning and building of the Interstate System.

PORTLAND CEMENT ASSOCIATION

NEW-TYPE Concrete

A national organization to improve and extend the uses of concrete

tee's conduct and operations was publicly proclaimed late last month in a dissent to the committee's first report to Congress.

(Based on its investigation of five of the nation's 189 international unions, the committee recommended new federal legislation to accomplish five goals: To regulate and control pension, health and welfare funds; to regulate and control union funds; to insure union democracy; to curb activities of middlemen in labor-management disputes; and to clarify the no-man's land that lies between state and federal jurisdiction over labor matters.)

In his dissent to the report, Senator McNamara accused the committee of "anti-union bias" and of engaging in sweeping generalities and unwarranted conclusions to "frame a blanket indictment against the labor movement". Except for the proposal on welfare fund legislation, which he would apply to management as well as labor, he viewed the other recommendations as unsupported by fact, or already covered by law or beyond the scope of the committee's jurisdiction.

Wages Continue to Rise As Some Trades Strike

Work on a number of construction projects in Boston, and Elmira, N. Y., were stalled last week when contract negotiations between building contractors and the laborers union broke down in both areas.

Boston laborers, who had 8,000 members on strike, were asking for a 55 cent hourly wage increase spread over three years. They now earn $2.45 an hour.

In Elmira, the laborers had asked for a 40 cent pay boost in a two-year contract. Old agreement, which expired March 31, gave them $2.10 an hour.

Meanwhile, the first of the building trades to settle in Buffalo, N. Y., won a 20 cent wage boost in a one-year contract. The increase, which goes to members of the electrical workers union, is payable in two installments—15 cents on May 1, which is the effective date of the contract, and 5 cents more on November 1. About 1,000 workers will be affected.

In Baltimore, members of the roofers union have settled on a two-year contract granting a 10 cent wage increase each year. New wage scales, which became effective April 1, range from $2.70 to $3.70. Painters have signed a two-year contract granting a 15 cent pay boost each year.

Elsewhere, a pipefitters local in Chicago has settled for a 20 cents hourly wage increase effective June 2. Teamsters working for ready-mix companies in Detroit have won a 43 cent boost spread over three years—14 cents this year, 10 cents in 1959 and 19 cents in 1960. Detroit carpenters—largest of the city's unions—are asking for a two-year contract with a 20 cent wage boost this year and 15 cents next year. Detroit boilermakers are seeking a 30 cent wage increase.

Union Seeks to Organize State Highway Personnel

With expansion of the nation's highway program have come renewed union efforts to organize engineering employees in state highway departments.

Active in this field is the AFL-CIO's American Federation of Technical Engineers, which now has 10 men working on this phase of its membership drive. Areas of current activity include New Jersey and Pennsylvania.

AFTE is attempting to appeal to both professional and nonprofessional employees.

To the professionals it says: "Almost forgotten these days are general salary increases needed to raise engineering incomes to a decent level somewhere near the pay of consultant and construction engineering men."

Nonprofessionals are told that construction workers (such as carpenters, operating engineers, cement masons and laborers) have a "superior economic advantage over educated, skilled and responsible technical employees" although "their income is allotted from the same appropriated highway funds as state employed engineers, surveyors, draftsmen and inspectors."

"Only by collective action," says AFTE President Russel Stephens, "can the individual be sure of the fulfillment of his hopes and aspirations."

Labor Briefs . . .

• **Strike benefits**—A federal court in Milwaukee, Wisc., has ruled that union strike benefits are taxable income. Decision is expected to affect thousands of workers who have treated such benefits as nontaxable gifts. Court said a striker works for the union by engaging in a strike and the benefits are payment for that work.

• **Apprenticeship**—Canadian contractors were told last month that the number of registered apprentices in their industry—now about 25,000—should at least be doubled if the industry wants to maintain its growth and a satisfactory standard of performance. Warning came from H. J. Ball, president of the Canadian Construction Association.

OFFICIAL PROPOSALS

Bids: April 29, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Reforestation Work
During 1958 and 1959
In Construction Areas and State Park
St. Lawrence County, New York
Specifications No. PA-3-11037
St. Lawrence Contract No. 46

NOTICE TO CONTRACTORS:

The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Reforestation Work during 1958 and 1959 in Construction Areas and State Park, St. Lawrence County, New York, until 10:30 A.M., Eastern Daylight Saving Time on the 29th day of April, 1958 at the Authority's office, 18th floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of work are:

Furnishing and
and planting—50,548 deciduous trees
Planting—324,428 evergreen seedlings

All of the reforestation work shall be completed on or before July 15, 1959.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: April 18, 1958.

Department of Forests and Waters Commonwealth of Pennsylvania

CONEWAGO DAM ON BEAVER CREEK
York County, Pennsylvania
CONTRACT NO. R 67:1-101.1

Sealed bids for constructing an earth dam will be received at the office of the Secretary of Forests and Waters, Room 512, Education Building, Harrisburg, Pennsylvania, until 2:00 P.M., E.S.T., April 18, 1958, at which time said bids will be publicly opened and read in Room 200, Education Building. The principal items of work include:

Rock Excavation	30,920 c.y.
Rock embankment	27,000 c.y.
Earth embankment	74,000 c.y.
Concrete	1,944 c.y.
Reinforcing steel	131,245 lb.
Excavation & Stripping	29,830 c.y.
Filters	3,040 c.y.
Core drilling	5,700 l.f.

Each bidder must submit an experience record, bid deposit, and equipment statement.

Contract documents may be examined free-of-charge or obtained from the Division of Flood Control, Department of Forests and Waters, Room 465, Education Building, Harrisburg, Pennsylvania, upon payment of twenty dollars ($20.00) for each set, which payment WILL NOT be refunded.

MAURICE K. GODDARD
Secretary, Department of
Forests and Waters
Commonwealth of Pennsylvania

(Continued on the following page)

OFFICIAL PROPOSALS

Bids: April 24, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 24th day of April 1958, by Henry A. Cohen, Director Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery	M 58-5	Work at Dam No. 11 on Barge Canal at Fort Plain	...	Furnishing and Installing New Uprights and Other Miscellaneous Work	$9,000 Plans $10	$175,000
DISTRICT No. 3, E. E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 41)	FARC 58-19	McGrawville, S.H. 378 McGrawville-Solon, S.H. 5436 Project F-525(3)	2.07	Asphalt Concrete, Type 1A=2.07 Miles	$27,000 Plans $2	$504,000
Tompkins (Rte. 96)	FARC 58-14	Trumansburg-Ithaca, S.H. 616 Project F-128(3)	1.43	Asphalt Concrete, Type 1A=1.43 Miles	$8,000 Plans $2	$143,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe	M 58-4	Barge Canal Wall at Bushnell's Basin	....	Repairing and Rebuilding Portions of Canal Wall	$8,000 Plans $10	$152,600
Monroe	M 58-3	Barge Canal Bridges E-127 and 137	....	Cleaning and Painting 2 Bridges	$300 Plans $10	$5,600
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Building, 65 Court Street, Buffalo 2, New York						
Chautauqua (Rte. 17)	FAC 58-5	City of Jamestown: East Second Street (Tiffany Ave. to Winsor St.) Project F-449(8)	1.61	Asphalt Concrete=1.60 Miles Miscellaneous Work=0.01 Mile	$11,000 Plans $2	$205,000
Erie (Rte. 198)	FASCE 58-1	Scajaquada Creek Expressway: Section 2 (Niagara St. to Delaware Ave.) Project U-UG-1087(3)	1.91 (1.95 Acc.)	Asphalt Concrete=1.37 Miles; Miscellaneous Work =0.54 Mile; 5 Twin Box Culv. Each 20' Wide; 2 H.G.S. Welded Plate Girders 257', 279.9'; 1 R.R.G.S. Welded Plate Girder 222.6'; 2 Bridges—Rolled Beam Girder 90', 169'; 1 Bridge—Welded Plate Girder 139'	$400,000 Plans $10	$7,315,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Building, 30 West Main Street, Hornell, New York						
Steuben (Rte. 70)	FARC 58-20	Big Creek, Pts. 1 & 2, S.H. 906; Big Creek, Pt. 3, S.H. 1000A; Big Creek, Pt. 4, S.H. 907; Bath-Avoca, S.H. 5204. Project F-867(4)	5.58	Asphalt Concrete (and Bridge Repair)=5.42 Miles Miscellaneous Work=0.16 Mile	$50,000 Plans $5	$944,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Rte. 11)	FARC 58-15	Philadelphia-Antwerp, S.H. 5548 Antwerp-County Line, S.H. 5427 Project F-476(6)	6.63	Asphalt Concrete=6.63 Miles	$77,000 Plans $5	$1,400,000
St. Lawrence (Rte. 37)	FARC 58-13	Massena-Helena, Pt. 1, S.H. 1261 Project F-580(12)	2.08	Asphalt Concrete, Type 1A=1.97 Miles Miscellaneous Work=0.11 Mile	$55,000 Plans $3	$990,000
St. Lawrence	OBA 58-4A	*Ogdensburg Bridge: Contract No. 4A	....	U.S. Approach Spans Superstructure; 6 Truss Spans @ 251.3' Each; 2-4 Span Continuous Girders @ 510' Each	U.S. $169,000 Plans $3	U.S. $3,077,230
Grenville, Ontario, Canada	OBA 58-4C	*Ogdensburg Bridge: Contract No. 4C	....	Canadian Approach Spans Superstructure; 6 Truss Spans @ 251.3' Each; 3-3 Span Continuous Girders @ 382.5' Each	U.S. $180,000 Plans $3	U.S. $3,223,775
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New York.						
Otsego (Rte. 28)	FARC 58-16	Colliersville-Milford Center, S.H. 318; Milford Center-Milford, S.H. 674; Milford Village, S.H. 783 Project F-469(3)	8.21	Asphalt Concrete, Type 1A=8.21 Miles; Widen 2 Reinf. Conc. Beam Bridges Spans 24.7' and 30'	$79,000 Plans $10	$1,438,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau (Rte. 27)	RC 58-21	Conduit Blvd., Pt. 3, S.H. 1699A	0.09	Twin Elliptical Concrete Pipe Culvert	$2,300 Plans $2	$42,000

*Note Well: The Plans and Proposals for Contracts OBA 58-4A and OBA 58-4C Will Be Available at P. L. Pratley, Cons. Engr., 909 Drummond Bldg., Montreal, Quebec, Canada: and Modjeski and Masters, Cons. Engrs., Forster at Sixth, Harrisburg, Penn., as well as the N.Y.S. D.P.W. Offices Listed.

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds.

Award of a contract is subject to priorities and allocations under the Defence Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: April 17, 1958

Soil Explorations and Foundation Investigation

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Eastern Standard Time, on April 17, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CLEARVIEW EXPRESSWAY, FEDERAL INTERSTATE ROUTE 513, HILLSIDE AVENUE TO THROGS NECK BRIDGE, PROJECT 1-1112(1), ITEM 19B, QUEENS COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-120.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, 1, N. Y.

(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, N. Y.

(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $69,400.00

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $4,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF
PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: April 29, 1958.

Notice to Contractors

Sealed bids for furnishing materials, equipment and constructing water mains in Middletown Road and from Middletown Road to Mechanicville Road, and a pumping station near the Prospect Hill Tank for the Water Commissioners of the Town of Waterford, New York, will be received at the office of the Water Commissioners, Second Street Pumping Station, Waterford, New York until 8:00 o'clock P.M., Eastern Standard Time on the 29th day of April, 1958, and then at said office, publicly opened and read aloud.

The work will consist of a water main 8 inches, 10 inches and 12 inches in diameter in Middletown Road from the Prospect Hill Tank to near the the north line of the Town of Waterford, New York, a 10 inch diameter main from a point north of St. Michael's Cemetery to the Mechanicville Road, and a pumping station with pumps, motors and appurtenances near the Prospect Hill Tank.

The Information for Bidders, Form of Contract, Plans and Specifications and Form of Performance Bond may be examined at the office of the Water Commissioners at the Water Works Pumping Station on Second Street, Waterford, New York and at the office of Keis & Holroyd, Consulting Engineers, 257 Broadway, Troy, New York. Copies thereof may be obtained at the said offices of the Water Commissioners or Keis & Holroyd, upon payment of $25.00 for each set. Any bidder upon returning such set promptly, in good condition, will be refunded his payment and any non-bidder upon so returning such set within 30 days of date for receiving bids, will be refunded $20.00.

The Water Commissioners, Waterford, New York, reserve the right to waive any informalities in or to reject any or all bids.

A certified check made payable to the order of the Water Commissioners of the Town of Waterford, New York, or bid bond in amount of 5% of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will, within 5 days thereafter, execute such contract and furnish a satisfactory performance bond. On failure to do so, he shall forfeit the deposit as liquidated damages, and acceptance of the bid will be contingent upon the fulfillment of this requirement by the bidder.

The successful bidder will be required to furnish a performance bond satisfactory to the Water Commissioners of the Town of Waterford, New York, in the amount of the contract, and having as surety thereon such surety company or companies as are acceptable to the Water Commissioners of the Town of Waterford, New York.

The work is divided into two Sections, as follows:

Section A—Furnishing materials for and constructing 17,300 lin. ft. of 6", 8", 10" and 12" cast iron water main.

Section B—Furnishing materials for and constructing Pump Station and Standpipe inlet piping.

Bidders may submit a proposal on either or both Sections.

No Bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above schedule time for the opening of bids or authorized postponement thereof.

W. LEE BLOOD,
President

Dated: March 31, 1958
KEIS & HOLROYD
CONSULTING ENGINEERS
TROY, NEW YORK

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: April 17, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
for the
Construction of the Barnhart Island Park Lighting and Distribution Facilities
Near Massena
St. Lawrence County, New York

Specification PA-5-14044
St. Lawrence Contract No. 45

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the complete installation of the Barnhart Island Park Lighting and Distribution Facilities until 10:30 A.M., Eastern Standard Time on the 17th day of April, 1958, at the Authority's office, 18th floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated as follows:

Installation of 169 roadway luminaires complete.
Installation of 127,000 feet of direct burial cable.
Construction of 3 vaults, 1 transformer station and 3 wood pole structures
Construction of 500 feet of 13.8 kv single circuit overhead line.
Removal of approximately 10 miles of 115 kv and 13.8 kv overhead lines.
Removal of a construction power substation and two load centers.

The work shall be completed on or before September 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars for initial set of contract documents, and Five $5.00) dollars for each additional set, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: May 1, 1958

Construction of New Bridge Over Jordan Creek

The County Controller of Lehigh County will receive sealed Proposals for the construction of a new Fourth Street Bridge over Jordan Creek until 11:00 A.M. (D.S.T.), May 1, 1958; at his office in the Lehigh County Court House Annex Building, Allentown, Pa.; and will publicly open said Proposals in the Meeting Room of the Lehigh County Commissioners after 11:15 A.M. (D.S.T.) of the same day.

Copies of the Plans, Specifications and Proposal Forms can be obtained at the office of G. Edwin Pidcock Co., Consulting Engineers, 546-548 Hamilton St., Allentown, Pa., upon payment of Fifty Dollars ($50.00) for each set. Any Bidder, upon returning such set in good condition within ten (10) days after the opening of the Proposals will be refunded Twenty-five Dollars ($25.00) of his payment.

Each Bidder must deposit with his Proposal, a certified check or surety company's bid bond in an amount of not less than five (5) percent of the base bid as defined in the Instructions to Bidders.

Proposals must be submitted in duplicate on the forms prepared by the Consulting Engineer and shall be placed in a sealed envelope properly identified, which must be in the hands of the County Controller at or before the time above mentioned.

No Bidder may withdraw his Proposal within fifteen (15) days after the actual date of the opening thereof.

The Lehigh County Commissioners reserve the right to waive any informalities in, or to reject any or all Proposals.

Alan F. Weinsheimer
County Controller

OFFICIAL PROPOSALS

Bids: April 24, 1958

New Jersey Turnpike Authority

CONTRACT NO. R-16

Proposals are invited for Contract No. R-16 which involves the construction of a median barrier and other incidental work in the median and on the inner shoulders of the New Jersey Turnpike between Mile 98 in the City of Linden and Mile 101 in the City of Elizabeth, all in Union County, New Jersey.

The principal items of work include:

Reinforced Concrete Median Barrier 7,650 linear feet
Macadam Median Surfacing 7,200 square yards
Silicone Treatment of Concrete Surfaces 6,500 square yards
Single Bituminous Surface Treatment 18,000 square yards
Galvanized or Painted Double Guard Rail 6,750 linear feet

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of April 24, 1958, at which time and place said proposals will be publicly opened and read.

Each bidder must submit a Contractor's Financial and Equipment Statement with his proposal.

Contract documents may be examined during office hours on or after April 7, 1958, at the office of the Authority and at the office of the Consulting Engineers, Ammann & Whitney, 111 Eighth Avenue, New York 11, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

April 3, 1958

Bids: May 7, 1958

Mackinac Bridge Authority

Advertisement for Proposals
for
Tower Elevators
for the
Mackinac Bridge

The Mackinac Bridge Authority will receive sealed proposals for Contract No. 12, Tower Elevators for the Mackinac Bridge until 2:00 P.M., Eastern Standard Time on the 7th day of May 1958 at the office of the Authority, Mackinac Bridge St. Ignace Michigan, at which time and place proposals will be publicly opened and read aloud.

The work includes the following:

Furnishing and installing two (2) service elevators, one in each of the main towers of the suspended spans, with all equipment and incidental work thereto for a complete installation ready for operation.

Plans, Specifications, Proposal Form and Contract Documents for the work are on file in the office of the Mackinac Bridge Authority and in the office of D. B. Steinman, Consulting Engineer, 117 Liberty Street, New York 6, New York, and may be inspected by prospective bidders during office hours.

Plans, Specifications, Proposal Form and Contract Documents may be obtained from D. B. Steinman, Consulting Engineer, 117 Liberty Street, New York 6, New York upon application and payment of a fee of fifteen ($15.00) dollars, ten ($10.00) dollars of which will be refunded upon return of the Plans to non-bidders, and all of which will be returned to bidders.

Bids must be made upon the proposal form included in the Contract Documents. Each proposal must be accompanied by draft or certified check payable to the order of the Mackinac Bridge Authority for the sum of ten thousand ($10,000.00) dollars.

The right is reserved to reject any or all bids.

MACKINAC BRIDGE AUTHORITY
Prentiss M. Brown, Chairman

April 3, 1958

OFFICIAL PROPOSALS

Bids: April 22, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR THE
CONSTRUCTION OF
ROADS, PARKING AREAS, AND
UTILITIES FOR
HOUSES, INFORMATION CENTER,
BATHHOUSES AND OVERLOOKS
NEAR MASSENA,
ST. LAWRENCE COUNTY, NEW YORK
SPECIFICATIONS NO. PA-5-11036
ST. LAWRENCE CONTRACT NO. SP2

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the roads, parking areas, and utilities for houses, Information Center, bathhouses and overlooks, near Massena, St. Lawrence County, New York until 10:30 A.M. Eastern Standard Time on the 22nd day of April, 1958 at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

The principal work consists of the construction of approximately 1.7 miles of access roads, approximately 13 acres of paved parking areas complete with all underground electrical facilities, drainage systems, water systems, sewerage systems for six operators' houses, Barnhart Island Beach Bathhouse, Barnhart Island Overlook on Barnhart Island, and the Superintendent's residence, Information Center, Massena Beach Bathhouse and Hawkins Point and Long Sault Overlooks on the New York Mainland.

All work shall be completed on or before December 31, 1958.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Twenty-five ($25.00) dollars per initial set and Ten ($10.00) dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office, and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: April 16, 1958

Washington Suburban Sanitary Commission
Contract No. 2128-W

FURNISHING AND DELIVERING
CAST IRON WATER PRESSURE PIPE

Sealed proposals for furnishing and delivering 1,500 lineal feet 3"; 200 lineal feet 12" Mechanical Joint Pipe; 30,000 lineal feet 6"; 40,000 lineal feet 8"; 10,000 lineal feet 10", 1,800 lineal feet 12"; 800 lineal feet 14" and 1,000 lineal feet 16" Cast Iron Tyton Joint Pipe. Alternate bids on the above will be taken on Mechanical Joint Pipe. Bids will be received in the office of the Purchasing Agent, G-13 of the Washington Suburban Sanitary Commission, 4017 Hamilton Street, Hyattsville, Maryland, until Wednesday, April 16, 1958 at 10:30 A.M. Eastern Standard Time, at which time and place they will be publicly opened and read.

Specifications may be obtained from S. Z. Salsberry, Purchasing Agent of the Commission.

T. Earle Bourne, Chairman
Frank L. Hewitt, Jr. V-Chairman
J. Norman Ager
James B. Bland
Willard A. Morris
L. S. Ray
Commissioners

Attest:
John C. Bonifant
Secretary

OFFICIAL PROPOSALS

Bids: April 24, 1958.

Contract O & M—474

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK

Sealed proposals for furnishing all labor, material and equipment for resurfacing at Buildings 102, 103, 104, and 139 at Port Newark, New Jersey will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. o'clock April 24, 1958, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, April 10, 1958

OFFICIAL PROPOSALS

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5026) SET ASIDE FOR SMALL BUSINESS, will be received at Denver, Colorado, until May 8, 1958, for furnishing one hundred twelve (112) trashracks, and trashrack support for outlet works and auxiliary outlet works at Trinity Dam, Central Valley Project, California. Delivery is desired within 210 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

READ THE OFFICIAL
PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

EMPLOYMENT OPPORTUNITIES

(Continued on pages 127-128)

ENGINEER

For employment in home office of large building contractor. Permanent position with opportunity for advancement with aggressive, growing company operating throughout the U. S. Experience in estimating desirable. Experience as field engineer or field office engineer desirable. State fully education, experience, military status. Personal data and salary requirements to:

Blount Brothers Construction Company
P. O. Box 949, Montgomery, Alabama

AISC SEEKING STRUCTURAL ENGINEER-WRITER

To fill position in our New York office. We are searching for an experienced structural engineer thoroughly familiar with structural steel who also has had experience in writing technical and general articles and reports. The man chosen will handle inquiries for technical information, and do creative writing for technical and promotional publications. Age preferably 35 to 45. Salary open depending on experience. Insurance and retirement plans available. Send complete resume, recent photo if available, and salary requirements by mail to:

AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.
101 Park Avenue, New York 17, New York

Field Engineers, Estimators Building Construction

Northern New York construction firm offers long range opportunities to civil engineers up to age 40 with experience in building construction for positions in estimating or field layout work.

John W. Rouse Construction Corporation
8 Church Street, Gouverneur, New York

DESIGNERS and DETAILERS

Experienced in the design or detailing of Erection Methods for Bridges and Structures. Write stating age, education and exper. Engineering office located New York City. Reply:

P-7501, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Sales Engineer to introduce outstanding product in sanitary and water supply fields. Young, aggressive, well-financed company. Salary open. Location: Southeast. P-7437, Engineering News-Record.

Chief Civil Engineer—Highways. Extensive administrative experience, modern highway design, either former state highway or consulting engineering experience acceptable. Salary high. Bonus incentive. P-7453, Engineering News-Record.

Field Engineer and Surveyor wanted to supervise and direct bridge construction in Columbus, Ohio area. Must be Registered. P-7608, Engineering News-Record.

Wanted—Competent engineers and draftsmen for work to produce plans for filtration plants and/or sewage treatment plants. Advise when can report, state age, experience, salary expected. P-7607, Engineering News-Record.

Experienced miscellaneous and ornamental iron estimator or detailer to take complete charge of drafting department, including all purchasing and expediting. Please give complete resume of experience, age, and salary expected in first reply. P-7613, Engineering News-Record.

Civil Engineers: Have openings for young, aggressive, ambitious Civil Engineer college graduates for field construction work in Mid-Western Area of the U.S. P-7667, Engineering News-Record.

Construction Man wanted. Preferably with degree in Civil Engineering from an accredited college. Ideal opportunity for young man in early or middle thirties to advance rapidly with expanding nationwide piledriving concern. Must be willing to travel. Salary commensurate with experience and ability. Profit sharing available after first year of full employment. P-7628, Engineering News-Record.

Construction Superintendent: Building construction superintendent, age 28 to 40, aggressive, ambitious, experienced, willing to move, for sizeable building projects. Give full information on experience and projects handled. P-7632, Engineering News-Record.

(Continued on opposite page)

EMPLOYMENT OPPORTUNITIES

DISPLAYED

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

——RATES——

UNDISPLAYED

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box Numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y. April 24th issue closes April 14th

POSITIONS VACANT
(Continued from opposite page)

Contractors assistant for small progressive heavy const. Co. Prefer C.E. Estimating, fieldwork & supervision. Salary, with ground-floor opportunity to advance with Co. Send resume to P.O. Box #4, Vestal, New York.

Field Engineer to travel southeastern states for AA-1 company, will work with distributor organization contacting architects, engineers and contractors. 27-40 years old, civil engineering or construction background preferred. Selling experience desirable—salary, expenses and incentive. Send resume to P-7670, Engineering News-Record.

Wanted—Construction Superintendent and Foreman. Must be experienced on reinforced concrete and pipe lines in Sewerage Construction. Please send resume including education, work history and salary. Requirements sent to P-7450, Engineering News-Record.

Engineer Estimator: At Present in Detroit, Michigan area but must be willing to relocate if necessary. Must have quantity survey and construction experience. Opportunity for permanent employment and advancement. P-7609, Engineering News-Record.

Man wanted by Prestressed concrete manufacturer to take complete charge of prestressing yard. Engineering degree desirable, but not necessary. Must have extensive experience. Write:- Ernil Co., Inc., 270 Knickerbocker Avenue, Hillsdale, New Jersey or phone NOrth 4-5900.

Civil Engineer with 6 years professional experience including 2 years in work related to Governmental Regulation of Public Utilities. Write: State Personnel Department, State Office Building, Hartford, Connecticut.

Wanted—Field Engineer, Estimator. Excellent opportunity for advancement in well established growing General Contracting firm Poughkeepsie area. Salary open. P-7693, Engineering News-Record.

Civil Engineer to handle technical phases of producing concrete for a Ready Mix Dealer and Paving Contractor. Spelman, P. O. Box 560, Champaign, Illinois.

POSITIONS WANTED

Consulting Civil Engineer, office in South Florida desires to represent national engineering firm in Florida and Caribbean area. PW-7422, Engineering News-Record.

FSEE MIT PE NY 15 years exp. bldg & airport design & construction, electronics maintenance seeks connection involving occasional travel or assignment overseas, pref. Far East. PW-7563, Engineering News-Record.

Teaching position desired. Age 31, P.E., M.S. in San Engr. Exp: design of several sewage treat. plants (incl. $6 million plant under constr.); university instructor; highway engineering. PW-7551, Engineering News-Record.

Civil Engineer for technical sales. Young, Dutch-trained, seven years experience in heavy pre-fabricated and pre-stressed concrete construction, manufacture, estimation. PW-7593, Engineering News-Record.

Construction Supt 22 years experience all phases highway work. PW-7658, Engineering News-Record.

Purchasing—Well rounded experience in procurement for heavy construction and general contracting, good administrator and able to handle sub-contractor. PW-7663, Engineering News-Record.

ROAD CONSTRUCTION ENGINEER

Asphalt

Graduate engineer with minimum 7 years experience in road construction using liquid asphalt. Some knowledge of manufacturing helpful. To serve as technical advisor to company, government, road contractors and builders in Saudi Arabia.

High salary plus liberal all-inclusive benefits conducive to large savings. Excellent community facilities.

Write outlining background and experience. Please include telephone number.

Recruiting Supervisor Box 213

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE
NEW YORK 22, NEW YORK

GENERAL SUPERINTENDENT FOR HEAVY CONSTRUCTION DIVISION

Excellent opportunity for man capable of supervising heavy construction projects at various locations throughout the South. Type of work normally includes bridges, pile driving operations, dock construction, dam construction, and sewerage treatment plants. This position requires an executive who is qualified and experienced to supervise all field construction and assist in preparation of bids. Write fully, giving education, past experience, references, availability, salary requirements, and personal data to

Blount Brother Construction Company
Post Office Box 949
Montgomery, Alabama
Attention:
Heavy Construction Division

CONSTRUCTION PROJECT MANAGER

EXECUTIVE EXPERIENCE

Established eastern construction firm desires experienced project manager and coordinator possessing executive ability, for multi-million dollar projects. Experience and knowledge of construction of high rise reinforced concrete apartment structures essential. Should have ability to work effectively with subcontractors, architects, owners and governmental agencies in representing home office. Should also be available for assignment within 1000 miles of New York City. Salary commensurate with ability and experience. Permanent position — send detail resume to:

P-7652, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

GRADUATE CIVIL or ARCHITECTURAL ENGINEERS

We are looking for a young, recent college graduate, with a degree in either architectural or civil engineering, for a position in our El Paso, Texas—Estimating Department. This position provides a training ground for our future superintendents and executives. It is an excellent opportunity for a young man to obtain a desirable position with a reliable firm doing all types of construction work.

ROBERT E. McKEE
GENERAL CONTRACTOR, INC.
PO BOX 562 EL PASO, TEXAS

Opportunity for SANITARY ENGINEER in Rochester, N. Y.

A Sanitary Engineer to supervise the maintenance and operation of Sewage Disposal Plants, Sewer Maintenance work and Incinerators and related work. Applicant must be a college graduate with B.S. degree with a major in Sanitary Engineering plus 10 years experience in the field of Sanitary Engineering, 4 years of which has been in Sewage Plant operation. Applicant must be eligible for a New York State Engineer's license and a New York State Class "A" Sewage Operator's license. Salary Range, $8550—$10,350. Apply by letter before June 15, 1958.

CIVIL SERVICE COMMISSION
242 West Main St.
Rochester, New York

REGISTERED PROFESSIONAL ENGINEER

$543 to $657 a month, including annual automatic and longevity salary steps. New position in traffic engineering. Experience and/or training in this field is desirable. Exam open to all U. S. citizens. Wisconsin Retirement Fund and Social Security Benefits. City Personnel Dept., 404 City-County Bldg., Madison 9, Wisconsin.

POSITIONS WANTED

(Continued from preceding page)

Accountant Office manager experienced heavy construction Roads, Dams, Airfields, Water Lines, underground fuel systems, Industrial capable of saving any Contractor more than $10,000. in taxes a year. Age 48, go anywhere. Make your offer. Available April 21st. PW-7569, Engineering News-Record.

Contractors Manager with ability to bid and organize heavy Construction and Buildings profitably under competitive conditions. Broad experience General Contracting Mid-West, South & West. PW-7660, Engineering News-Record.

Civil Engineer available for foreign work preferably Europe. 5 years experience, U.S. & abroad, highway, earthwork, tunnel, construction, design, estimate, English & German perfect, Spanish. PW-7621, Engineering News-Record.

Engineer, BSCE, 28, 7 years exp. in highways, railroads, irrigation, structures, bidding, and estimating. Presently Chief Engineer for large US const. firm in Central America. Speak Spanish fluently, desire foreign employment. PW-7626, Engineering News-Record.

Soils & materials engineer; M.S(Soil Mech.) & M.S(Highwy. Engg.); about ten years design office & field experience; special experience in soils and foundations; regd. P.E.; present emoluments about $10,000 annual; single; 39; available April, any location. PW-7672, Engineering News-Record.

Materials Engineer—Administration, engineering and laboratory supervision on multi-million dollar Government and private projects. Soil Mechanics—specifications, design and construction of roads, airfields, dams, structural foundations, site grading. Concrete and Asphalt—specifications, site grading. Concrete and Asphalt—specifications, mix designs, batch plants, placement, pavement design. Experience also—prestressed concrete, precast units, structural steel. PW-7679, Engineering News-Record.

Construction Contract Engineer, 37, BSCE, LLB. Industrial, Administration Building contracts. Will relocate NE or N.Y. PW-7687, Engineering News-Record.

Archt.—Struct. Engr. exp. design, supv., estimating of indust., commer., munic., constr., desires position with archt., engr., constructor. PW-7686, Engineering News-Record.

Project Bridge Engr., 31, graduate, P. E. 9½ yrs. bridge design & design supervision exp. New England or Mid-Atlantic. PW-7696, Engineering News-Record.

Construction Manager—38, BS Civil Eng., MS Indus. Management, P.E. N.Y. & Ga. 11 yrs chemical plant design & constr. Outstanding record past 3 yrs supervising 7 major projects totalling $40 million; capable also as executive assistant or construction-engineering sales. PW-7713, Engineering News-Record.

Vice-President, medium size construction firm; Registered Eng., Bachelor's Degree Civil Eng., Master's Degree Bus. Admin., 10 yrs. experience one firm as Field Engineer, Superintendent, Estimator and Project Manager, Partner. Age 35, married, 3 children, Scandinavian. Salary past 4 yrs. $15,000 adjusted by bonus & dividend. Desire aggressive position with opportunity. PW-7698, Engineering News-Record.

Engineer Of Materials and Laboratories— Experienced in highway construction materials survey, testing of soils and aggregates and design of the roadway structural section. Experience in highway materials research. Capable as construction engineer or assistant to project manager. Domestic or Foreign. PW-7692, Engineering News-Record.

Energetic Graduate Civil Engineer, 25, Married. Desires responsible, challenging position in Europe or Middle East. Present location—Iraq. PW-7691, Engineering News-Record.

P.A. If your job size justifies and policy permits Field Purch. Dept. including Subcontracts I offer unimpeachable background ethics & ability. PW-7699, Engineering News-Record.

Job Office Manager—Accountant, Top notch experience, office management, accounting, payrolls, timekeeping, costs, taxes, auditing, personnel, purchasing. PW-7714, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — EQUIPMENT USED or RESALE

DISPLAYED ——RATES—— *UNDISPLAYED*

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

$2.40 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. April 24th issue closes April 14th.

AUCTION SALE

Sat. APRIL 12th *in the heart of New York City*

EACH PIECE POSITIVELY SOLD TO THE HIGHEST BIDDER!

CONSTRUCTION EQUIPMENT

TRACTORS • CRANES • LOWBOYS
SCRAPERS • TRUCKS • LOADERS
SHOVELS • BACKHOES • PUMPS
COMPRESSORS • ROLLERS
WELDERS, Etc

From New York's Leading Dealers & Contractors.

BANK FINANCING AT SALE SITE.

EQUIPMENT MART OF NEW YORK, Inc.

35-18 Laurel Hill Blvd., Maspeth, N. Y.
STillwell 6-8460

FOR RENT

3900 MANITOWOC LIFTCRANE

Only 9 months old—in excellent condition—70 ton capacity—160 foot boom—30 foot jib—torque convertor and manual control—located in western Pennsylvania—will move anywhere on long term lease.

STANDARD STEEL SERVICE, INC.
P. O. Box 929, Johnstown, Pa.
Phone 37-8451 or 37-7901

WANTED:

Krane Kar or Cherry Picker Crane, late model, heavy duty. 5 to 12 ton capacity.

W-7649, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED

48 x 60 or 48 x 72 JAW CRUSHER

Forward information to:

W-7648—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty third year.

WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

CONTRACT WORK WANTED

Design, specifications, contract drawings, for all types of simple, continuous, and long span bridges. Tight time schedules met. Professional Engineers. Bridgeway Associates, 127 Liberty St., N.Y.C.

BUSINESS OPPORTUNITY

Land Surveying & Consulting Engineering Company For Sale, well established organization, excellent reputation now doing large volume business in land surveys and property surveys. Located in large mid-continent city, owner wishes to retire. Identify yourself completely in your inquiry. BO-7638, Engineering News-Record.

SEARCHLIGHT Equipment Spotting Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment not currently advertised. (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads to see if what you want is not currently advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. Y. 36, N. Y.

Please help us locate the following equipment components.

.....
.....
.....

NAME .....
TITLE .....
COMPANY .....
STREET .....
CITY 4/10/58

SHOVELS — CRANES

(a) Two—2 Yd.—L820K Lorain Shovels—1954 Models with D-337 Cat. Diesel power, 34" pads, air controls. $30,000. as shovel only, $35,000. as combination with 70 ft. Crane/Drag boom attachment. Excellent condition and appearance.

(b) Two—1½ Yd.—Osgood Shovels. Model 810 Ser. #5781 and 5870. Repowered in 1956 with new GM6-71 Diesel. Amsco Manganese dippers, air controls. $18,750. as combination with 50 ft. crane booms. Excellent condition and appearance.

(Member AED)

FUNKHOUSER MACHINERY CO.

2425 Jefferson Street

Phone—Harrison 1-4365 Kansas City, Mo.

FOR SALE

MANITOWOC MODELS 3500 & 3900

Liftcranes

Forsythe Equipment Co., Inc.

37-11 Vernon Blvd.

Long Island City 1, N. Y.

Used EUCLID Scrapers

5 only. Model 23TDT (six wheelers), with 15½ cu. yard scrapers. These units have rebuilt G. M. 6-110 engines with latest modification, Allison transmissions and torque converters. Equipped with 29.5 x 25, 28 ply drive and scraper tires. Located in Detroit, Michigan. We encourage inspection. These units are priced for quick sale.

CONTRACTORS MACHINERY COMPANY

13200 North End Ave. Detroit 37, Mich.

FOR SALE

48B Bucyrus Erie Shovel diesel 2 cy
10,000' 9" x 9" road forms
1,550' 6" x 6" road forms*
2,500' 16" x 12" airport forms*
*Used four months only

WILLIAMS CONSTRUCTION COMPANY

Box 5045 Balto. 20, Md. Murdock 6-6600

FOR SALE

Caterpillar D-6 Hi-Lift
Completely Overhauled
Priced to Sell.

ANDERSON EQUIPMENT COMPANY

P.O. Box 427, Bridgeville, Pa.
Phone: LEhigh 1-6020 or CAnal 1-5300

ETNYRE DISTRIBUTORS

1500 Gal. Capacity — Price $3600.
Good Condition — Mounted on
C.O.E. Autocar Straight Chassis

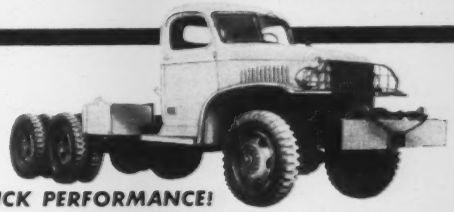
E. STEWART MITCHELL, INC.
3301 Ridgewood Ave. Baltimore 15, Md.

FOR SALE

Parsons Mod. 310, 350 & 155 Ditchers
Buckeye Mod. 160, 120, 407, #12, C-15 & 51
Cleveland Mod. 95, 110, 140 & 320
Barber-Greene 44-C 8'3" Like new
Barber-Greene Roustabout
Cleveland W 80 Backfiller Tamper
Buckeye "F" Backfiller

FS-7642, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

GMC 6x6 NAMED ARMY'S BEST ALL-AROUND TRUCK!



- Extra Pull Power!
- Double Traction for Mud!
- Special "Off Road" Design!

UNUSED!

GUARANTEED! NEW-TRUCK PERFORMANCE!

From Government Storage — these all-wheel-drive GMC 2½ ton 6x6's were specially designed by the U. S. Army to take the roughest terrain in all kinds of weather. These unused 6x6's can do the same job for you in all your truck jobs;whether in a muddy field or along a super highway. Processed—by Memphis Equipment Company—down to the last bolt to assure you of receiving the finest unused GMC 2½ ton 6x6 trucks available today. Parts available anywhere in the nation.

For specifications, prices, delivery—write, wire or phone collect—JAckson 5-7841

MILTON Y. TOOMBS, JR. Sales Manager

MEMPHIS EQUIPMENT Company

ARMY TRUCKS • PARTS
CONSTRUCTION EQUIPMENT
766 SO. THIRD STREET • MEMPHIS, TENNESSEE

ALL SIZES
NEW • USED

HY DRACHMAN STEEL CORP.
STRUCTURAL STEEL

IMMEDIATE
DELIVERY
FROM STOCK

SPECIALIZING IN PILE SECTIONS • H BEAMS • WF BEAMS

The Contractors Steel Supply House
52-25 2nd Street, Long Island City, New York • RAvenswood 9-1262

STEEL IS OUR BUSINESS

PILE DRIVING EQUIPMENT

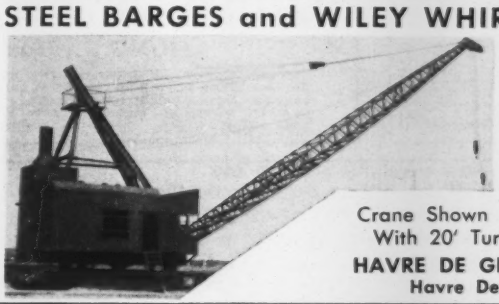
VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

- DROP HAMMERS
- DRIVING CAPS
- HOISTS AND BOILERS
- STEEL LEADS
- PILE DRIVER HOSE
- STEEL SHEET PILING

CONMACO, INC.

DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

STEEL BARGES and WILEY WHIRLEY FLOATING CRANES



Capacity
to
100 tons

Continuous Production
Prompt Delivery

Crane Shown 40 Tons, 40 Ft. Radius
With 20' Turntable, 100 Ft. Boom

HAVRE DE GRACE SHIPYARD INC.
Havre De Grace, Maryland

JUST RELEASED GOVT. SURPLUS

TENSIOMETER

TRADE NAME DYNAMOMETER

Measures Traction, Tension, or Weight

A PRECISION INSTRUMENT WHERE QUICK TESTS FOR SAFETY ARE ESSENTIAL.

Mfg. by Dillon Co.

5" DIAL
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Atomic Excavation

As long ago as 1946 the Army Engineers were interested in how big a hole an atomic bomb would dig. Setting off conventional explosives in progressively larger charges, their objective, in a then highly secret program, was to estimate what an atomic bomb would do to the Panama Canal locks. Cause them to vanish completely was the conclusion, which led, logically if not very seriously, to the idea that atomic excavation might be a quick and economical way to convert the lock canal to a sea level waterway.

This may have been the first time that anyone speculated, as everyone is doing now, on how the enormous force of atomic explosions can be used for peaceful purposes. The AEC's Test Ranier, in which a bomb, with the power of 1,700 tons of TNT, was detonated inside a Nevada mesa, has given the speculators something to work on. The explosion is estimated to have shattered some 400,000 tons of rock. Enough of this rock settled into the 100 ft spherical cavity created around the blast to create another considerable cavity higher up.

Should it be possible to control the size and location of such cavities, something useful might be made of this blasting method, and particularly so if, as reported, the radioactivity is confined within a thin, fused layer around the original hole. But regardless of radioactivity, atomic blasts may be able to shatter the earth's structure enough to aid the recovery of oil. And with "clean" bombs, which are said to be just around the corner, harbors could be created and rivers deepened. Rooms for underground factories and storage warehouses might also be excavated.

Thus runs the speculation. Controlling the charges and the radioactivity, as of today, makes the practical possibilities seem remote. Yet these opportunities for peaceful useful uses of atomic explosions still remain. They should not be cast aside as too visionary, but explored at every opportunity.

When Buying Equipment

Better construction weather will soon spark widespread equipment purchases by contractors and public agencies. And those who have kept careful records of equipment cost and performance will, as usual, be in the best position to buy wisely and well—unless they are a public agency required to buy on competitive bids. Then the "bargains" that result may not be bargains at all since a low first cost is not always the best buy.

The Caterpillar Tractor Company recently issued a statement on this subject, which is well worth careful consideration. Says Caterpillar: "By law, few public works officials can buy the best, most economical equipment to accomplish their work. Laws frequently force them to buy solely on price tag with bids submitted on a competitive basis. Initial price, however, represents only the down payment on a long-term investment, which during the life of the machine will include fuel, operator's wages, service, maintenance, repairs and final trade-in value. Failure to include these hides the true cost from the public, although the lowest bid restriction is supposed to provide this protection.

"Accurate and extensive cost records provide a solution to this problem. A complete life-time history, from initial price, through operating cost, to final trade-in value, will show the actual costs per unit of work accomplished. Successful contractors, who must get the most work done at the lowest cost, use this system in their buying activities. It is by means of cost figures that they know to the fraction of a cent per yard or per hour the type and make of machine which will do the job for the least money. They buy accordingly, regardless of initial price.

"Keeping similar records may not eliminate the wasteful restrictions of 'lowest bid only' laws, but it is a step in this direction, providing a basis for revision of the laws. And the records may be used in writing specifications to find the best bids on costly machines. This course will assure protection of the money paid by taxes."

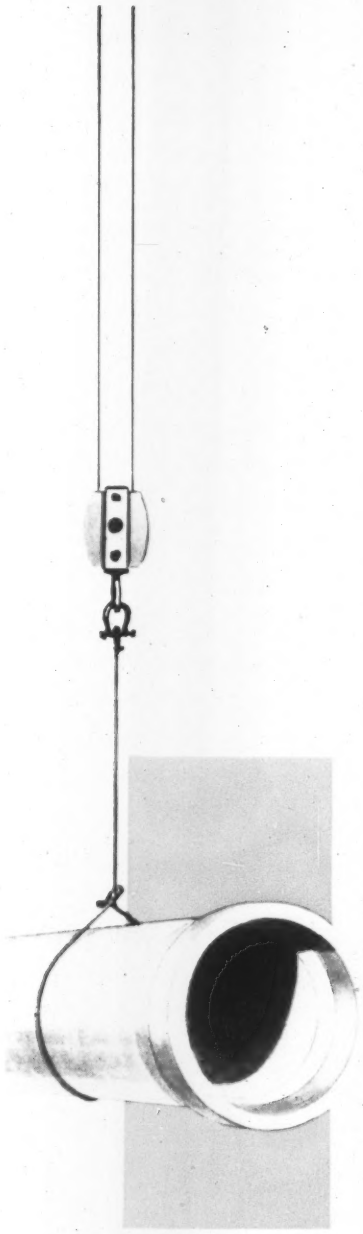
Modern mechanized construction obviously places a premium on accurate knowledge of what it costs to own and operate the necessary equipment. And the cost records, which the Caterpillar statement stresses, assume their first and commanding importance when the time for buying new equipment comes around.

Decision Negates Safety Law

An odd decision in a Canadian court has left Ontario without an effective law to protect construction workers against trench cave-ins. Acquittal came in a case that involved six deaths when the presiding magistrate was presented with differing definitions of what constitutes a trench (see p. 26). He declined to choose between the conflicting definitions.

Ontario law states that trench sides either must be supported, or sloped at 45 deg, and it defines a trench as an excavation in which depth exceeds width. The defense argued that for the purpose of this definition width should be measured at the surface; the prosecutor argued that width at the bottom was critical. The law didn't specify which.

It would seem that many witnesses would have been available to help the magistrate out of his quandary. It is to be hoped the provincial legislature won't lose time in spelling out this law that the magistrate saw fit not to interpret. And it is to be hoped, too, that localities everywhere will be brought by this instance to check their laws governing safe construction practices.



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